

The
J. M. and L. A. Osborn
Company

CATALOGUE A

CLEVELAND

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The J. M. & L. A. Osborn Co.

CLEVELAND

No. 1877 Salesman _____

CATALOGUE

A

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To W A McVicker

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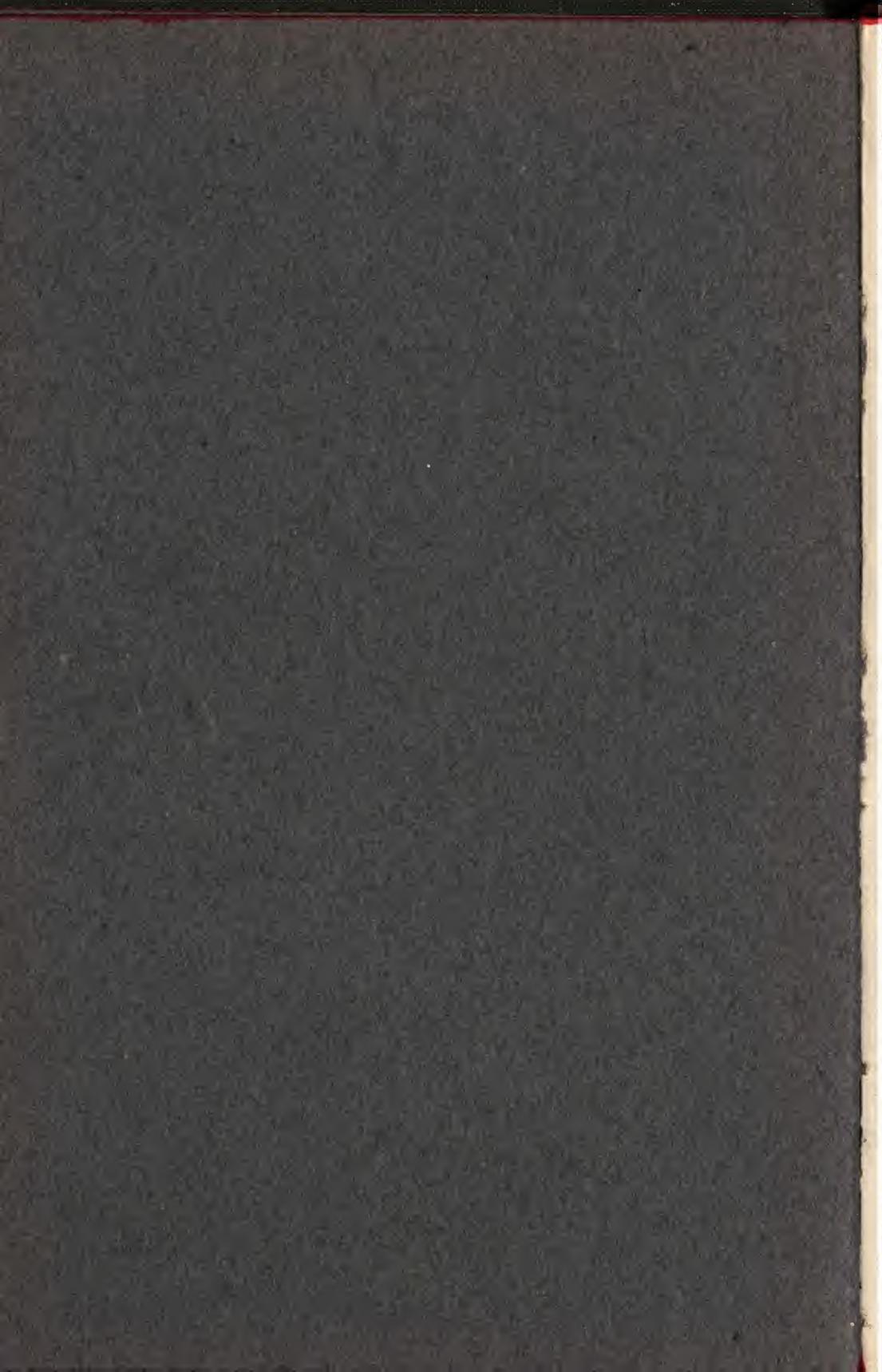
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includes
Cans
Tins
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25⁰⁰

The J. M. & L. A. Osborn Co.

Manufacturers and Distributors of
**Tinners', Roofers'
and Furnacemen's Supplies**

Also

**Special Sheets and Tin and Terne Plates
For Manufacturers' Requirements**



High Grade Roofing Tin, Charcoal and Coke Bright Plates, Heater Pipe Plates, Long Terne and Tinned Dairy Sheets

Planished and Polished Iron and Steel Sheets, Uniform Color Blue Steel Sheets, Special Finish and Pickled Sheets for Auto Bodies, Hoods, Fenders, Metal Furniture and Steel Range Stock, Special Sheets for Nickel-plating and Electro, Brass and Copper Plating, Enameling and Open Hearth Deep Stamping Stock, Electrical Sheets, Sheet Copper, Zinc and Brass, Solder and Metals. :: :: ::

Black and Galvanized

Flat and Corrugated Sheets and all forms of Roofing made from Bessemer and Open Hearth Steel, Old-Fashioned Wrought Iron, Toncan Metal and Genuine Knobbed Charcoal Iron. ¶ Blue Annealed Sheets, Tank, Floor and Universal Plates, Iron and Steel Rods, Bars, Bands and Hoops, Hot and Cold Rolled Strip Steel. ¶ Eaves Trough, O. G. Box and Roof Gutters, Double-Seamed Mitres, Conductor Pipe and Elbows, Double Cross Lock Roll Roofing and Ridge Roll made from Copper, Genuine Knobbed Charcoal Iron, Galvanized and Terne Coated Sheets, Toncan Metal Galvanized Sheets and Bessemer and Open Hearth Steel, Galvanized and Terne Coated Sheets. ¶ Furnace Pipe and Fittings, Hot Air Ventilators, Registers and Faces, Asbestos Paper and Cement, Anchor Flour Paste, Roofing and Valley Tin in Rolls, Galvanized Garbage and Ash Cans, Wash Boilers, Stove Pipe, Reducers, Elbows and Collars. ¶ Prepared Roofing, Building Papers, Slaters' Felt, Pitch, Cement and Paint.

Agents for Niagara Tinners' Tools, Machines, Power Shears and Presses.

General Offices and Warehouse

1047 to 1065 Superior Ave. Viaduct

Cleveland, O.

1911

4543

TO THE TRADE

In publishing this Catalogue our aim has been to give accurate, complete and comprehensive information of the general line of SHEET METALS, together with a number of articles manufactured therefrom, used by TINNERS, ROOFERS, CORNICE MAKERS and FURNACE MEN.

We are sure you will find this a book of reference, indispensable to your business and one you will use constantly, containing as it does detailed information, including many valuable tables, of service to all sheet metal workers.

We also believe that manufacturers using sheets made from IRON and STEEL in the production of their goods will find this catalogue contains valuable information regarding sheets that are manufactured for special purposes which we can supply.

We desire to advise manufacturers who require special material for certain work that we shall be glad to submit samples and information when requested to do so and are confident with our knowledge of the sheet business and the facilities we command that we can take care of their requirements, and often help them overcome their difficulties by suggestions we may make.

We shall carry a large and well assorted stock of goods shown in this catalogue insuring the usual prompt shipments from Cleveland which has become a fixed habit with our house.

From the mills also we will be prepared to furnish for immediate shipment our HIGH GRADE ROOFING PLATES both with a STEEL and CHARCOAL IRON base.

BLACK and GALVANIZED SHEETS, and FORMED ROOFING, SPECIAL FINISHED SHEETS, CHARCOAL AND COKE BRIGHT PLATES, SHEET COPPER and other mill products, can often be shipped very quickly from the mills.

As in former years our purpose shall be to serve the trade promptly with goods right in quality and price.

Thanking you for past favors and soliciting your valued orders in the future, we remain,

Yours very truly

THE J. M. & L. A. OSBORN CO.

March, 1911. .

CBC 895

SUGGESTIONS

Orders from parties with whom we are not acquainted should be accompanied by the money or satisfactory references.

To parties not known to be responsible terms are cash on presentation of sight draft with bill of lading attached on arrival of goods. On shipments made this way the buyer always secures the cash discount.

On goods ordered C. O. D., or sight draft with bill of lading attached, we require a cash deposit to guarantee charges both ways.

All accounts subject to sight draft after maturity. Overdue accounts subject to 6 per cent interest.

All contracts subject to strikes, accidents, delays in transit, or other causes beyond our control.

Avoid ordering goods "same as last," but give specific descriptions and order by catalogue.

State distinctly how the goods ordered are to be shipped, whether by freight, express, or otherwise. If there is any preference for a certain route, it should be mentioned on the order.

Great care is used in filling orders promptly, packing properly, and obtaining receipts from carriers for delivery in good condition. WE ARE THEREFORE NOT RESPONSIBLE FOR GOODS DAMAGED OR LOST IN TRANSPORTATION. All possible precautions, however, will be used to prevent injury or delay, and, if requested, shipments will always be traced.

Claims for errors, deficiencies or imperfections will not be entertained unless made within 10 days after receipt of goods.

Defective material will be replaced free of cost, but no claim for labor, damage, freight, etc., will be allowed, neither will we allow any claim after goods have been used or dispersed. We cannot be held accountable for consequential damages or loss.

If goods arrive in bad order give your receipt accordingly by having your freight agent note the condition on the paid freight receipt he hands you which will then form the basis for a claim that will be allowed by the transportation company.

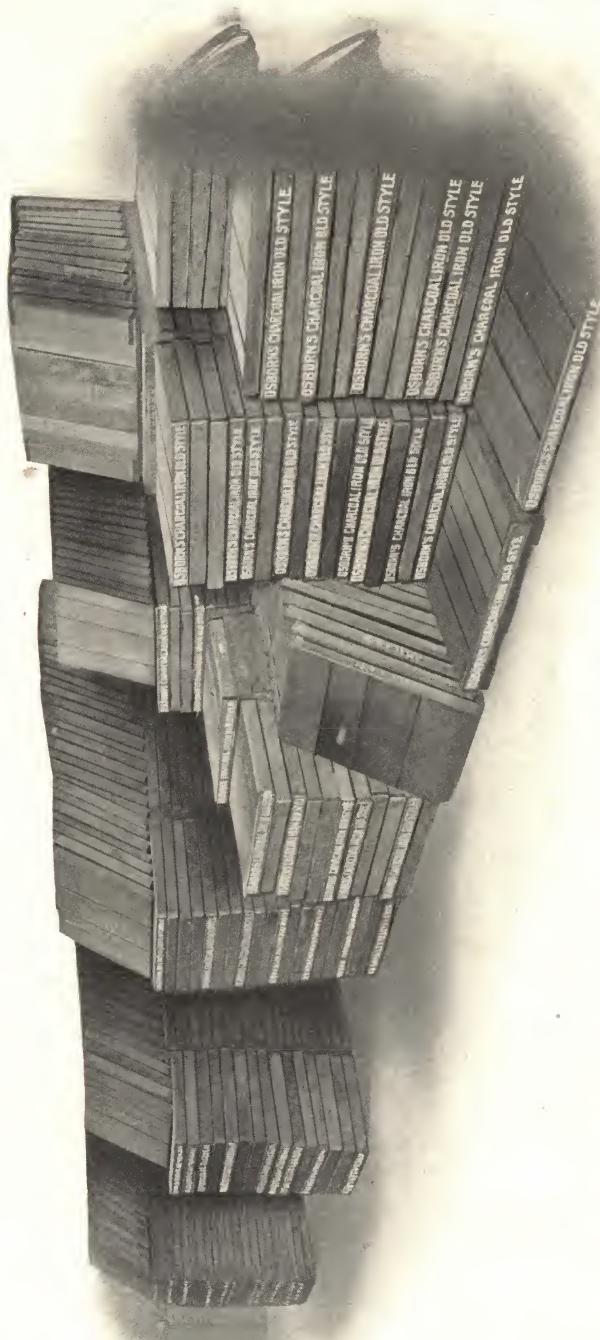
Do not return material of any kind without communicating with us and obtaining our approval for returning goods and the proper shipping directions for same.

All returned goods must be plainly marked with name and address of the signer and proper notification of shipment with copy of shipping receipt must be sent to this office.

Prices are subject to change without notice, and it is understood that we will in no way be held responsible for such changes.

Quotations made unless otherwise stated are for immediate acceptance and stenographical and clerical errors are subject to correction.

We confine our sales of Sheet Metals to parties regularly established in business and equipped with tools for doing Sheet Metal work.



View of a Section of Our Osborn's Old Style Tin Plate Stock

HIGH GRADE TERNE PLATES FOR ROOFING

There is nothing that can equal a ROOF of GOOD TIN PLATE properly laid and painted.

A GOOD TIN ROOF gives perfect satisfaction and is durable.

TERNE PLATES for ROOFING have long been considered the most perfect of all materials for this purpose.

Their points of superiority over all other materials are:

LIGHTNESS and weather-proof qualities,

ADAPTABILITY to any surface,

NEATNESS of appearance,

EASE of application,

CLEANLINESS and PROTECTION against fire from within or without.

ADVANTAGES OF A GOOD TIN ROOF

A GOOD TIN ROOF IS LIGHT IN WEIGHT; it requires only a very light roof construction, which is in itself a very marked saving in the cost of any building. Slate, tile and tar roofs are very heavy, as the following table of weights of roofing materials will show:

WEIGHT PER SQUARE (100 SQUARE FEET)

TILE (shingle)	1200 to 1800 lbs.
TILE (Spanish)	800 to 850 lbs.
SLATE, $\frac{3}{8}$ inch, good grade	650 to 700 lbs.
FOUR-PLY SLAG	525 to 575 lbs.
THREE-PLY SLAG	350 to 450 lbs.
SHINGLES, spruce and pine	400 lbs.
TIN, IC thickness, standing seam.....	65 lbs.

A TIN ROOF IS PERFECTLY CLEAN; this is an important feature where the water from the roof is collected in cisterns. There is nothing injurious in the tin roof, provided the paint used on it is harmless. Cistern-water from a tin roof is pure, clean and tasteless.

A TIN ROOF IS NEAT IN APPEARANCE. Where laid with standing seams the effect is attractive, particularly where the crest of the roof is finished off with simple design. Tin looks infinitely better than any prepared or composition roof.

A TIN ROOF IS EASILY PUT ON; is adaptable to any surface, from a flat deck to a vertical wall. Note that tile, shingles, slate, etc., are only adapted to very steep slopes and that tar and gravel and similar roofings must be laid flat, or they will melt and run or "creep" in hot weather.

IF A TIN ROOF IS DAMAGED IT CAN BE REPAIRED QUICKLY AND CHEAPLY. There is no wholesale tearing up of the roof, as in the case of tar and gravel and composition roofings, to find the leak. A roofer can repair a leak in a tin roof permanently in a few minutes.

TIN IS NOT AFFECTED BY HEAT OR COLD; it is equally popular in the Northwestern regions and in the Southern States.

A GOOD TIN ROOF IS THE MOST WEATHERPROOF FORM OF ROOFING that can be had at any cost. Wind and snow cannot sift through it, as with shingles, slate and tile. Heavy rain and moisture cannot get through it, as it covers the upper surface of the roof with an unbroken, continuous sheet of metal.

A GOOD TIN ROOF IS ECONOMICAL; it is an investment rather than an expense. A building covered with a roof that requires no repairs is worth more in buying and selling. The first cost of the tin roof is the only cost excepting the slight additional cost of an occasional coat of paint.

A TIN ROOF IS THE BEST KNOWN PROTECTION AGAINST FIRE, excepting only reinforced concrete or hollow tile.

REPORT OF NATIONAL FIRE PROTECTION ASSOCIATION, JULY, 1908. ROOFINGS

"Certain proprietary roofings listed below (the list contained 35 of the leading kinds of composition and patent roofings) have been examined and tested.

These tests indicate that the fire retardant properties of these materials are inferior to those of slate, metal or good tin clad roofs."

Allow us to suggest to our customers the desirability, for many good reasons, of their pushing the use of roofing tin for roof coverings as well as for gutters, valleys and flashings where of necessity it often has to be used anyway.

If manufacturing and using poor roofing tin for several years after the industry was started in this country in 1891, brought discredit upon roofing tin for roofing purposes, there is no good reason why that stigma should longer attach itself to roofing tin and in our judgment the tinners of our country should start a general and united effort to rehabilitate tin plates for roofing purposes in the minds of their customers and others who have contracts for roofs to place.

Talk tin plate for roofing purposes. Above all, to start with, use it yourselves when you roof your own buildings.

But—be wise! Buy only good roofing tin, solder and paint and use the best methods for applying.

GOVERNMENT WORK

HIGH GRADE ROOFING PLATES FOR GOVERNMENT POST OFFICES, UNITED STATES COURTS AND CUSTOM HOUSES

The United States Government in the erection of all Post Office, United States Court and Custom House Buildings, demands roofing plates of the highest quality. Their specifications are most exacting and specific, requiring plates with a special base and a coating up to a specified standard applied by an approved method.

Only a roofing plate made from a

GENUINE CHARCOAL IRON BASE

coated by the full palm oil process through a seven pot old way set and carrying a coating rich in tin will stand the analysis.

OSBORN'S CHARCOAL IRON OLD SYLE

has been used again and again for this work and is fully in accord with their specifications. The affidavit which must be sworn to before a notary when submitting samples for approval is as follows:

CERTIFICATE

Cuyahoga County, } ss
State of Ohio, } ss

"I hereby certify, of my own knowledge and belief, that this Tinplate bearing brand Osborn's Charcoal Iron Old Style submitted by..... is made from IX gauge Black Sheets of genuine charcoal iron, free from impurities (that no steel of any kind has been employed in its manufacture) that all traces of acid have been removed and the sheets evenly and perfectly coated on both sides by the palm oil process, with a coating composed of 25% pure tin and 75% lead weighing not less than 40 pounds to a box of 112 20 x 28 sheets.

..... President.
THE J. M. & L. A. OSBORN CO.

Sworn to and subscribed before me this..... day of 1911

..... Notary Public.

What is good enough for the United States Government should be good enough for any one.

To put it plainly, can your clients afford to use anything less durable and meritorious than the best? Talk tin for roofing purposes and urge your customers to follow the example of the United States Government who use it on most of their best public buildings in many cities throughout the country.

SPECIFICATIONS FOR TIN ROOFING

The following is a form of specifications for Tin Roofing work, adapted for architects' use from the standard working specifications of the "National Association of Master Sheet Metal Workers." This represents the best and only practice employed for good results:

All tin used on this building shall be "OSBORN'S CHARCOAL IRON OLD STYLE 40-lb. Coated." No substitute for this brand will be allowed.

Use IX thickness for valleys, gutters and spouts, as required by design. Use IC thickness for the roof proper, decks, etc.

SHEATHING BOARDS—These shall be of good, well seasoned, dry lumber, narrow widths preferred, free from holes and of even thickness. Boards to be laid with tight joints or tongued and grooved, nail-heads well driven in. Green hemlock, chestnut, oak and ash are not recommended.

For **FLAT-SEAM ROOFING**, edges of sheets to be turned one-half inch; all seams to be locked together and well soaked with solder. Sheets to be fastened to the sheathing boards by cleats, using two one-inch barbed wire nails to each cleat. No nails to be driven through the sheets.

For **STANDING-SEAM ROOFING**, sheets to be put together in long lengths in the shop, cross seams to be locked together and well soaked with solder; sheets to be made up the narrow way in the rolls and fastened to the sheathing boards by cleats spaced one foot apart.

VALLEYS AND GUTTERS to be formed with flat seams well soldered, sheets to be laid the narrow way.

FLASHINGS to be let into the joints of the brick or stone-work and cemented. If counterflashings are used, the lower edge of the counterpart shall be kept at least three inches above the roof.

SOLDER to be of the best grade, bearing the manufacturer's name and guaranteed one-half tin and one-half lead—new metals. Use rosin only as a flux.

CAUTION—No unnecessary walking over the tin roof or using for storage of material shall be allowed. In walking on the tin care must be exercised not to damage the paint nor break the coating of the tin. Rubber-soled shoes or overshoes should be worn by the men on the roof.

PAINTING TIN WORK—All painting to be done by the roofer. Before laying, all tin to be painted one coat on the under side, using red oxide of iron or Venetian red paint, mixed with pure linseed oil. No patent dryer or turpentine to be used.

All paints to be applied with a hand brush and well rubbed on. Tin to be painted immediately after laying. A second coat shall be applied in a similar manner, two weeks later.

No deviation from these specifications shall be made—they must be carried out in every particular. Only a first-class roof will be accepted.

We commend the above specifications now largely used by the leading architects and followed in practice by all good tinners to those of our friends who are desirous of doing only first-class work which is the best way to firmly establish the use of good ROOFING TIN for covering buildings in favor with the public.

ROOFING TIN AS A FIRE RETARDENT

It has long been known to the sheet metal fraternity that a building covered with a tin roof is much less liable to be damaged by fire from outside than a building roofed with almost any other material, and that a fire within such a building is practically no menace to surrounding property.

It is only within recent years, however, that the insurance companies have given this fact due consideration in arranging their rates and are putting buildings so roofed in a class with those considered as having a practically fire proof material used for roofing. (See report of National Fire Protection Association, July, 1908, on page 6.)

The truth is, tests and actual experience in conflagrations have proved that the tin-covered wooden firedoor is the most effective bar to flames. Such doors have been adopted as the highest standard by the National Fire Protection Association. A tin roof gives the same protection to the upper part of the building. The wood may even char slightly under the tin in extreme cases where the heat is intense, but the fire cannot penetrate the unbroken sheet of metal.

Slate and tile roofs, whether laid on wood or on metal roof framing, will crack and fall when exposed to heat, laying bare the sheathing and the interior of the building, and rendering the work of firemen below extremely hazardous. Tar-and-gravel roofs, and similar built-up composition roofings containing pitch, tar and other bituminous compounds, are the worst fire risk—excepting shingles—and are usually classed as such by insurance companies.

In the case of fire from within the building the tin roof acts as a blanket to the flames, and will often hold together intact when the roof supports burn through and collapse, smothering the flames and preventing the disastrous upward draft which often carries sparks and embers to a distance. This well-known feature of tin roofs is a great aid to firemen in fighting the flames.

STANDARD APPROVED FIRE DOOR TERMS

(In accordance with the requirements of the National Board of Fire Underwriters.)

Recognizing the necessity of having a plate of undoubted quality with which to cover fire shutters and windows exposed to the weather so that they shall surely be intact at all times and perfectly covered, to be of service in case of fire, the National Board of Fire Underwriters recently decided upon a certain quality of roofing tin to be used for this purpose.

Fire doors and shutters to receive the approval of the Underwriters' laboratories at Chicago must be made according to very strict specifications issued by them and covered with a roofing tin that meets all the requirements of these specifications.

"Osborn's IC 20 Lbs. Endorsed Open Hearth" is manufactured especially for this purpose and is in exact accord with the requirements of these specifications. None better can be made and you may be sure your doors and shutters will be approved by the inspection bureau of your city if they are covered with this brand of roofing tin. Each box contains an affidavit over the signature of our president.

**OSBORN'S
IC 20 LBS
ENDORSED
OPEN HEARTH**

HIGH GRADE ROOFING PLATES

A BRIEF HISTORY

While **Tin Plate** has been in use for nearly ninety years as a roofing material, it was not until about 1850 that the first Terne or roofing plates (so called Terne by virtue of the introduction of lead with the tin to the extent of 50 per cent) were manufactured in Wales. At that time there was no such thing heard of as heavy coated **Terne Plates**, the practice in tinning being to take off all the metal possible, resulting in a plate carrying about 14 pounds to a case of 112 sheets, 20 x 28. At that time tallow was used in place of palm oil.

It is also of interest to note that at this period and up until 1875 the base from which all **Charcoal Bright** and **Terne Coated** plates was rolled was **Charcoal Iron** or in some cases from a mixture of **Charcoal Iron** and **Puddled Iron**, not less than one-third of puddled iron and not exceeding one-half.

Following 1875 and up until 1891, when the **Tin Plate** industry, by the virtue of the protection afforded by the McKinley tariff law of 1890, was established in the United States, the manufacturers in Wales used a mild soft Bessemer steel instead of the iron plate for a base. This material was quite satisfactory and few complaints were heard as to the roofing plates made from steel sheets not being durable and lasting on the roof.

The starting of the industry in this country in 1891, while an event of world-wide interest, brought with it some troubles for the users of roofing plates, and the pin hole difficulty, with which the trade are all too familiar and which we are all trying to forget now that it has been largely eliminated, was first discovered and became troublesome.

It is now generally admitted that the Bessemer Steel which was supplied to the tin plate manufacturers of this country was the direct cause.

We soon realized if we were to offer our customers satisfactory **Roofing Plate** it must be made on a **Charcoal Iron** base, same as the plates were rolled from years before. Investigation brought to light many roofs in this country which had been covered with the **Old Charcoal Iron Ternes** that were still good after giving satisfactory service for from thirty to fifty years.

Correspondence had with authorities in the old country showed that no **Charcoal Iron Roofing Plates** were being manufactured in Wales, and statements made by United States Consular Agents about this time developed the fact that the last **Charcoal Iron Knobbling Fires** had been dismantled in Wales as far back as 1892.

In 1902, however, the industry was re-established and in this country by the starting of the mills at Washington, Pa.

In this connection we desire to state that the impression existing that formerly the base, or the beginning, was charcoal pig iron, is incorrect. There has not been a charcoal blast furnace operated in England or Wales for over a hundred years. The base was pig iron produced in a coke blast furnace, the pig iron being of such grades as would form a mixture which, when finished into sheets, could be coated with a minimum amount of wasters.

The pig iron, in the first place, was melted in what was known as a running-out fire, where it underwent partial refinement, and then run out in such form that it could be readily broken into small fragments for the knobbling fires.

The present method is identical with the process employed years ago. Our knobbling fires are better than those formerly used, being an improved type. Our hammers, whose service is of the most vital character, have been improved to such a wonderful extent as to render comparison odious.

HIGH GRADE ROOFING PLATES, CHARCOAL IRON BASE

There is no difference between the material of today (chemically or physically) and the material that was made years ago, notwithstanding the fact that now a more refined base is used to begin with. The pig iron then employed represented the crudest form of steel known to the metallurgist, consequently through its use at that time the labor of the knobbler was more severely taxed in time and strength to prepare it for the hammer. Instead of using the pig iron, the modern manufacturer has resorted to scrap, the refined product of pig, and by the use of charcoal and the process of knobbling, eliminates almost the last trace of carbon and manganese, the fundamental constituents of steel. The use of the proper scrap should enable us to make a purer iron than was made years ago, by reason of the scrap being of a more refined nature than the pig.

OSBORN'S CHARCOAL IRON OLD IC STYLE

Our line of CHARCOAL IRON ROOFING PLATES was immediately offered to the SHEET METAL WORKERS, introduced to the leading ARCHITECTS throughout the country under the above brand and was received with instant favor as something that had long been needed. This brand having now been in use for over eight years under all kinds of atmospheric conditions on the roof, is beginning to demonstrate its good qualities by the TEST of TIME, the only test after all that finally and conclusively proves its ability to wear and properly protect the building on which it is used as a roof.

We believed the introduction of a CHARCOAL IRON ROOFING PLATE would solve the difficulty and each year since has only more firmly confirmed our opinion that these plates will wear as well and last as long as the CHARCOAL IRON PLATES manufactured prior to 1875.

OSBORN'S CHARCOAL IRON OLD STYLE has frequently been used on UNITED STATES GOVERNMENT POST OFFICES as the SUPERVISING ARCHITECT of GOVERNMENT WORK insists on a plate being used with a GENUINE KNOBBLED CHARCOAL IRON BASE.

It is specified by leading ARCHITECTS throughout the country and used generally by SHEET METAL WORKERS when they can convince their customers that when it comes to the question of a roof the best only should be used. YOU AND YOUR CUSTOMERS ARE PROTECTED when you use OSBORN'S CHARCOAL IRON OLD STYLE ROOFING PLATES.

Each sheet is resquared and carefully inspected so that only perfect plates go out.

No Wasters are sold under this brand.

Supplied in IC and IX thickness. Packed 112 sheets per case.

HIGH GRADE ROOFING PLATES, CHARCOAL IRON BASE

THE OSBORN
CHARCOAL IRON
OLD METHOD

This brand is made on the same CHARCOAL IRON base as our best plate, coated in exactly the same way, but only carries 30 lbs. Terne Mixture. The same care is used in coating, inspecting and assorting this plate, so that only perfect sheets are allowed to go out.

All sheets under this brand are resquared.

Supplied in IC and IX thickness. Packed 112 sheets per case.

OSBORN'S
CHARCOAL IRON
ROOFING

This brand is made on the same CHARCOAL IRON base as our best plate, coated in exactly the same way, but only carries 25 lbs. Terne Mixture. The same care is used in coating, inspecting and assorting this plate, so that only perfect sheets are allowed to go out.

All sheets under this brand are resquared.

Supplied in IC and IX thickness. Packed 112 sheets per case.

GENUINE
CHARCOAL IRON
HAND MADE

This brand is made on the same CHARCOAL IRON base as our best plate and coated by a special hand dipped process giving a rich M. F. dark oil finish that is usually only found on the heavier coated plates. The same care is used in inspecting and assorting this plate, so that only perfect sheets are allowed to go out.

All sheets under this brand are resquared.

Supplied in IC and IX thickness. Packed 112 sheets per case.

HIGH GRADE ROOFING PLATES, CHARCOAL IRON BASE

**WASHINGTON
CHARCOAL IRON
GUARANTEED
15 YEARS
1911**

This brand is guaranteed for a period of 15 years when properly laid and painted and when not subjected to any unusually severe service caused by conditions surrounding the roof such as the close proximity of a furnace belching sulphurous fumes or where acid or other deleterious liquids may be poured on it or over it.

It is made on the same CHARCOAL IRON base as the other plates in this line, is reasonable in price and the sheets are resquared. The guarantee is named in the brand as you will note by facsimile of stamp shown above.

Supplied in IC and IX thickness. Packed 112 sheets per case.

**OSBORN'S
STAR
CHARCOAL IRON
OLD STYLE**

This brand is made from the same CHARCOAL IRON sheets as our better plates, coated on a combination set so that the sheets are redipped and carries a rich terne mixture of 20 lbs. to the box 20 x 28.

Supplied in IC and IX thickness. Packed 112 sheets per case.

**HHHH
CHARCOAL IRON
ROOFING**

This brand is coated by the same process as our Osborn's Star Charcoal Iron Old Style and carries 15 lbs of rich terne mixture. The sheets are resquared and carefully assorted, thus giving the trade a GENUINE CHARCOAL IRON plate for a very reasonable price.

Supplied in IC and IX thickness. Packed 112 sheets per case.

HIGH GRADE ROOFING PLATES, CHARCOAL IRON BASE**EUREKA****IC****CHARCOAL IRON**

This brand carries a coating of about 12 pounds and supplies the requirements for a plate with a genuine CHARCOAL IRON base at a low price.

Supplied in IC thickness. Packed 112 sheets per case.

No. 1 GENUINE**IC****CHARCOAL IRON**

In coating the heavier coated CHARCOAL IRON plates, sheets that are not perfectly coated naturally arise and are selected out from the prime sheets which only go into our better brands.

There is no market for these wasters or imperfectly coated high grade plates so of necessity some treatment must be accorded them to reduce them to a quality and a price at which they can be sold. They are therefore put back through the tinning set and by means of the hot palm oil the surplus coating is removed, leaving 10 to 12 lbs. of metal on the sheets and in most cases a perfectly coated plate.

They are also by reason of this double treatment through the tinning set a very durable and high grade second and as such they are marketed by us and stamped as above.

Supplied in IC and IX thickness. Packed 112 sheets per case.

CHARCOAL IRON**SECONDS**

Frequently able to supply these plates with the Charcoal Iron base in 20, 18 and 10 lb. coatings at quite a reduction from the cost of the prime sheets.

These, however, we will not stamp other than CHARCOAL IRON, with the gauge IC or IX.

In this way it is not possible for anyone to substitute Seconds for Prime Plates.

We carry the 10 lb. Seconds in stock.

Supplied in IC and IX thickness. Packed 112 sheets per case.

In the manufacture of CHARCOAL IRON plates there is a larger percentage of plates that are not perfectly coated than there is in Steel plates, and we are frequently able to supply these plates with the Charcoal Iron base in 20, 18 and 10 lb. coatings at quite a reduction from the cost of the prime sheets.

HIGH GRADE ROOFING PLATES, STEEL BASE

American ingenuity has caused the introduction of many labor-saving devices which have made it possible to produce tin plates quickly and cheaply, the increase in the use of cheap grades of tin plates for various manufacturing purposes following the reduced cost of such plates.

Unfortunately, much cheap terne plate has flooded the market and in many cases this cheap Roofing Plate has found its way on the roof, utterly failing to give the satisfaction expected of this form of roofing material.

It is absolutely necessary that the plate should carry sufficient coating to properly protect the base. The use of cheap, light-coated plates is not advised and should be discouraged.

The different grades of tin plate offered for roofing vary greatly in quality. With frequent repairs, cheap tin plate may last eight or ten years but no longer. With no repairs, a roofing tin even with a Steel Base heavily coated will give excellent satisfaction on a roof. Although we are thoroughly convinced ourselves that Roofing Plates with a Charcoal Iron Base are the best, still there are a large number of owners who feel that they cannot afford to use these Plates which are necessarily higher in price and for that reason we have continued to furnish the trade with a fine line of OPEN HEARTH STEEL BASE ROOFING PLATES in the various weights of coating with which the trade has been familiar for years.

This brand has been made in the United States since the Tin Plate industry was started here, in 1891, in exactly the same way, and has an enviable reputation, being specified very largely by architects, and used by tinners and roofers everywhere who want a Perfect Roofing Plate.

OSBORN'S GUARANTEED OLD IC STYLE

This brand has always been coated strictly by hand by a special process, through Palm Oil, which has insured an even distribution of the coating over the entire sheet.

The base from which these plates are rolled is a SPECIAL ANALYSIS OPEN HEARTH SOFT STEEL and they are coated with a Terne Mixture composed of not less than 30 per cent pure tin and 70 per cent refined lead; carry 40 lbs. to the box, 20 x 28, and the IC gauge will weigh about 245 lbs. net.

This plate is resquared, each sheet is carefully inspected and assorted so that no wasters are ever sold under this brand.

Supplied in IC and IX thickness. Packed 112 sheets per case.

HIGH GRADE ROOFING PLATES, STEEL BASE

**OSBORN'S
IC
OLD METHOD**

This brand is made on the same SPECIAL ANALYSIS OPEN HEARTH SOFT STEEL as our best brand and is coated by the same process, but it only carries 35 lbs. of coating. This Plate carries as much coating which is evenly distributed over the entire sheet as many of the leading brands on the market. It has a rich mottled dark Oil Finish and will give excellent service on the roof.

It is carefully inspected and assorted so that nothing but Perfect Plates go out. It is resquared, and no Wasters are ever offered under this brand.

Supplied in IC and IX thickness. Packed 112 sheets per case.

**THE OSBORN
ROOFING
IC**

This brand is coated through a mixture very rich in pure Pig Tin and has a beautiful bright mottled appearance, which not only pleases the eye but insures a Plate that is free from oil, easily soldered and very satisfactory and gives unusually good service on the roof. On account of its bright dry finish it takes the paint readily and is therefore a good Plate for Gutter and Conductor.

The Plates are carefully inspected and assorted and no Wasters are sold under this brand.

Each sheet is resquared and stamped with the brand.

Supplied in IC and IX thickness. Packed 112 sheets per case.

HIGH GRADE ROOFING PLATES, STEEL BASE

OSBORN'S STAR IC OLD STYLE

This is furnished in two qualities, one, a beautifully mottled Bright Dry Finish same as our Osborn Roofing, the other a well mottled Oil Finished same as our Osborn's Guaranteed Old Style. It carries 25 lbs. of Terne mixture very rich in tin.

We have no hesitation in saying that this brand is one of the most popular sold in the country and is certainly a fine plate to use where

first-class plates are needed but where the heavier coated and higher-priced cannot be used on account of the cost.

In ordering the quality preferred should be designated as Oil Finish or Bright Dry.

There are no Wasters ever sold under this brand and the sheets are resquared and carefully assorted.

Supplied in IC and IX thickness. Packed 112 sheets per case.

We have recently added this brand to our list of Roofing Plates to satisfy the demand for a High Grade M. F. Finished Plate at a reasonable price. We have no hesitation in saying that you will be well pleased with not only the appearance of this plate but also the wearing qualities. It is strictly Palm Oil fluxed and finished plate carrying a heavy coating well distributed over the entire sheet.

There are no Wasters sold under this brand and the sheets are resquared and carefully assorted.

Supplied in IC and IX thickness. Packed 112 sheets per case.

**OSBORN'S
IC
OLD STYLE
OPEN HEARTH**

**OSBORN'S
IC 20 LBS.
ENDORSED
OPEN HEARTH**

This brand is made in exact accord with the requirements of the Underwriters' Laboratories, Chicago, for use on Fire Doors and Shutters and is therefore a very durable Plate for outside exposed work. It is made on a SPECIAL ANALYSIS OPEN HEARTH SOFT STEEL base and carries 20 lbs. of rich Terne metal to the box, 20 x 28. We furnish it regularly in 14 x 20 size on account of the requirement of the Underwriters making it necessary to lay the sheets not larger than 14 x 20 on the doors and shutters. This plate will give excellent service for use in any kind of outside work such as Gutters, Valleys or Roofs and we can highly recommend it. The sheets are very carefully selected and no Wasters are ever sent out under this brand.

Supplied in IC and IX thickness. Packed 112 sheets per case.

derwriters making it necessary to lay the sheets not larger than 14 x 20 on the doors and shutters. This plate will give excellent service for use in any kind of outside work such as Gutters, Valleys or Roofs and we can highly recommend it. The sheets are very carefully selected and no Wasters are ever sent out under this brand.

HIGH GRADE ROOFING PLATES, STEEL BASE

**NAVA
IC
OLD STYLE**

This brand is only furnished in one quality and that the Bright Mottled. It carries 20 pounds of coating and is a beautiful plate in appearance, having small distinct mottles which show the richness of the coating.

There are no wasters sold under this brand and the sheets are resquared and carefully assorted.

Supplied in IC and IX thickness. Packed 112 sheets per case or box.

**SANTIAGO
IC
RE - DIPPED**

This has been one of our most popular brands and is a plate we take great care in making to insure its being thoroughly and completely coated over the entire sheet with no waves in the coating, the same as often appear in the lighter coated Old Style plates.

It is finished through the oil, nicely mottled and is largely used where a moderate priced plate is required.

There are no wasters sold under this brand; it is mill squared and carefully assorted. If desired, this brand can be furnished stamped

**SANTIAGO
OLD STYLE**

Supplied in IC and IX thickness. Packed 112 sheets per case or box.

HIGH GRADE ROOFING PLATES, STEEL BASE**EUCLID
IC
RE - DIPPED**

This brand carries the same coating as our Santiago Re-dipped, but has a bright dry finish, being nicely mottled and perfectly covered.

There are no wasters sold under this brand; it is mill squared and carefully assorted.

Supplied in IC and IX thickness. Packed 112 sheets per case.

**OLD STYLE
IC
RE - DIPPED**

This brand is a well mottled dry finished plate and is re-dipped, thus insuring a plate evenly coated over the entire sheet. It has given excellent satisfaction whenever used and we can recommend it as an excellent plate for medium price work.

There are no wasters sold under this brand; it is mill squared and carefully assorted.

Supplied in IC and IX thickness. Packed 112 sheets per case.

**NEOSTYLE
IC**

This is a new plate we have added to cover the requirements for a plate of good quality at a low price. It has a bright, dry finish, nicely mottled and is perfectly covered.

There are no wasters sold under this brand. It is mill squared and carefully assorted.

Supplied in IC and IX thickness. Packed 112 sheets per case.

HIGH GRADE ROOFING PLATES, STEEL BASE

**I C
OLD STYLE**

This brand is a Bright Mottled Dry Finished Plate and is made to supply an Old Style brand at a low price.

There are no wasters sold under this brand. It is mill squared and carefully assorted.

Supplied in IC and IX thickness. Packed 112 sheets per case.

**EUREKA
I C**

This is a full Wooster grade plate and is made only of full weight quality. We carry this in stock and supply it, unless otherwise ordered, in the dark oil finish.

There are no wasters sold under this brand. It is mill squared and carefully assorted.

Supplied in IC and IX thickness. Packed 112 sheets per case.

SALTA

This brand is full Wooster grade in coating and appearance, but is made on a somewhat lighter sheet, so that it weighs somewhat less than full weight.

It is mill squared, carefully assorted and is giving excellent satisfaction wherever used.

Supplied in IC and IX thickness. Packed 112 sheets per case.

CONTINUOUS ROOFING



We are prepared to furnish Continuous Roofing Tin made from any of our special brands of high grade roofing tin. Our Continuous Tin Rolls are made from regular size sheets 20 x 28, seams locked and well soldered. Each roll contains 50 lineal feet. Regular widths, 10, 14, 20, 28 inches.

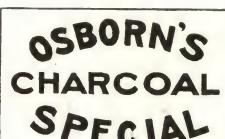
The following brands are kept in stock for immediate shipments:



Inches wide	10	14	20	28
IC, per roll.....	\$....	\$....	\$....	\$....
IX, per roll.....



Inches wide	10	14	20	28
IC, per roll.....	\$....	\$....	\$....	\$....
IX, per roll.....



Inches wide	10	14	20	28
IC, per roll.....	\$....	\$....	\$....	\$....
IX, per roll.....

Painted one side, with metallic paint in linseed oil, 10 cents per roll, extra.
 Painted two sides, with metallic paint in linseed oil, 20 cents per roll, extra.
 Prices on any or all grades will be furnished on application.

TABLE SHOWING THE COST OF TIN ROOFING PER SQUARE

When Tin 20 x 28 Costs Per Box	Standing Seam Roofing Costs Per Square	When Tin 14 x 20 Costs Per Box	Standing Seam Roofing Costs Per Square	When Tin 20 x 28 Costs Per Box	Flat Seam Roofing Costs Per Square	When Tin 14 x 20 Costs Per Box	Flat Seam Roofing Costs Per Square
\$ 6.00	\$ 1.62	\$ 3.00	\$ 1.75	\$ 6.00	\$ 1.57	\$ 3.00	\$ 1.66
6.50	1.75	3.25	1.89	6.50	1.70	3.25	1.80
7.00	1.89	3.50	2.04	7.00	1.83	3.50	1.94
7.50	2.02	3.75	2.18	7.50	1.96	3.75	2.08
8.00	2.16	4.00	2.33	8.00	2.09	4.00	2.21
8.50	2.30	4.25	2.47	8.50	2.22	4.25	2.35
9.00	2.43	4.50	2.62	9.00	2.34	4.50	2.49
9.50	2.56	4.75	2.77	9.50	2.48	4.75	2.63
10.00	2.70	5.00	2.91	10.00	2.61	5.00	2.77
10.50	2.83	5.25	3.06	10.50	2.74	5.25	2.91
11.00	2.97	5.50	3.20	11.00	2.87	5.50	3.05
11.50	3.10	5.75	3.35	11.50	3.00	5.75	3.19
12.00	3.24	6.00	3.50	12.00	3.14	6.00	3.32
12.50	3.37	6.25	3.64	12.50	3.27	6.25	3.46
13.00	3.51	6.50	3.79	13.00	3.40	6.50	3.60
13.50	3.64	6.75	3.93	13.50	3.53	6.75	3.74
14.00	3.78	7.00	4.08	14.00	3.66	7.00	3.88
14.50	3.91	7.25	4.22	14.50	3.79	7.25	4.02
15.00	4.04	7.50	4.37	15.00	3.92	7.50	4.16
15.50	4.18	7.75	4.51	15.50	4.05	7.75	4.29
16.00	4.32	8.00	4.66	16.00	4.18	8.00	4.42
16.50	4.46	8.25	4.80	16.50	4.31	8.25	4.56
17.00	4.59	8.50	4.95	17.00	4.44	8.50	4.70
17.50	4.73	8.75	5.09	17.50	4.57	8.75	4.83
18.00	4.86	9.00	5.24	18.00	4.70	9.00	4.97
18.50	5.00	9.25	5.38	18.50	4.83	9.25	5.11
19.00	5.13	9.50	5.53	19.00	4.96	9.50	5.25
19.50	5.26	9.75	5.67	19.50	5.09	9.75	5.39
20.00	5.40	10.00	5.82	20.00	5.22	10.00	5.53
20.50	5.53	10.25	5.96	20.50	5.35	10.25	5.67
21.00	5.67	10.50	6.11	21.00	5.48	10.50	5.81
21.50	5.80	10.75	6.25	21.50	5.61	10.75	5.95
22.00	5.94	11.00	6.40	22.00	5.74	11.00	6.09
22.50	6.07	11.25	6.54	22.50	5.87	11.25	6.23
23.00	6.21	11.50	6.69	23.00	6.00	11.50	6.37
23.50	6.34	11.75	6.84	23.50	6.14	11.75	6.51
24.00	6.48	12.00	6.99	24.00	6.28	12.00	6.65

The above estimates do not include cost of laying material.

**14 x 20 FLAT SEAM TIN
ROOFING**

Table showing quantity of 14 x 20 tin required to cover a given number of square feet with flat seam tin roofing.

In the following estimates all fractional parts of a sheet are treated as a full sheet.

Full size of a sheet, 14 x 20, locked at sides.

Covering surface, 231 $\frac{1}{8}$ square inches, or 1.61 square feet.

No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required																																																																																																																																																																																																																																															
1	1	29	17	53	33	79	50	125	78	1	27																																																																																																																																																																																																																																														
2	2	28	18	54	34	80	50	130	81	3	2	29	19	55	35	81	51	135	84	4	3	30	19	56	35	82	51	140	87	5	4	31	20	57	36	83	52	145	91	6	4	32	20	58	37	84	53	150	94	7	5	33	21	59	37	85	53	155	97	8	7	34	22	60	38	86	54	160	100	9	6	35	22	60	38	87	55	165	103	10	7	36	23	62	39	88	55	170	106	11	7	37	23	63	40	88	56	175	109	12	8	38	24	64	40	90	56	180	112	13	9	39	25	65	41	91	57			14	9	40	25	66	41	92	58			15	10	41	26	67	42	93	58			16	10	42	27	68	43	94	59			17	11	43	27	69	43	95	60			18	12	44	28	70	44	96	60			19	12	45	28	71	45	97	61			20	13	46	29	72	45	98	61			21	14	47	30	73	46	99	62			22	14	48	30	74	46	100	63			23	15	49	31	75	47	105	66			24	15	50	32	76	48	110	69			25	16	51	32	77	48	115	72			26	17	52	33	78	49	120	75		
3	2	29	19	55	35	81	51	135	84																																																																																																																																																																																																																																																
4	3	30	19	56	35	82	51	140	87																																																																																																																																																																																																																																																
5	4	31	20	57	36	83	52	145	91																																																																																																																																																																																																																																																
6	4	32	20	58	37	84	53	150	94																																																																																																																																																																																																																																																
7	5	33	21	59	37	85	53	155	97																																																																																																																																																																																																																																																
8	7	34	22	60	38	86	54	160	100																																																																																																																																																																																																																																																
9	6	35	22	60	38	87	55	165	103																																																																																																																																																																																																																																																
10	7	36	23	62	39	88	55	170	106																																																																																																																																																																																																																																																
11	7	37	23	63	40	88	56	175	109																																																																																																																																																																																																																																																
12	8	38	24	64	40	90	56	180	112																																																																																																																																																																																																																																																
13	9	39	25	65	41	91	57																																																																																																																																																																																																																																																		
14	9	40	25	66	41	92	58																																																																																																																																																																																																																																																		
15	10	41	26	67	42	93	58																																																																																																																																																																																																																																																		
16	10	42	27	68	43	94	59																																																																																																																																																																																																																																																		
17	11	43	27	69	43	95	60																																																																																																																																																																																																																																																		
18	12	44	28	70	44	96	60																																																																																																																																																																																																																																																		
19	12	45	28	71	45	97	61																																																																																																																																																																																																																																																		
20	13	46	29	72	45	98	61																																																																																																																																																																																																																																																		
21	14	47	30	73	46	99	62																																																																																																																																																																																																																																																		
22	14	48	30	74	46	100	63																																																																																																																																																																																																																																																		
23	15	49	31	75	47	105	66																																																																																																																																																																																																																																																		
24	15	50	32	76	48	110	69																																																																																																																																																																																																																																																		
25	16	51	32	77	48	115	72																																																																																																																																																																																																																																																		
26	17	52	33	78	49	120	75																																																																																																																																																																																																																																																		

A full box 14 x 20, 112 sheets, will cover approximately 180 square feet.

**14x 20 STANDING SEAM TIN
ROOFING**

Table showing quantity of 14 x 20 tin required to cover a given number of square feet with standing seam tin roofing.

In the following estimates all fractional parts of a sheet are treated as a full sheet.

Full size of sheet, 14 x 20, locked at sides.

Covering surface, 220.9 square inches, or 1.53 square feet.

No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required	
1	1	27	2	28	18	53	35	79	52	125	82
2	2	28	2	29	19	54	36	80	53	130	85
3	2	29	2	30	19	55	36	81	53	135	89
4	3	30	3	31	21	56	37	82	54	140	92
5	4	31	4	32	21	58	38	83	55	145	95
6	4	32	5	33	21	59	39	85	55	150	99
7	5	33	6	34	23	60	40	86	57	155	102
8	6	34	6	35	23	61	40	87	57	160	105
9	6	35	6	35	23	62	41	88	57	170	112
10	7	36	7	36	24	63	42	89	59		
11	7	37	8	37	25	64	42	90	59		
12	8	38	8	38	25	65	43	91	60		
13	9	39	9	39	26	66	44	92	61		
14	10	40	10	40	27	66	44	93	61		
15	10	41	10	41	27	67	44	94	62		
16	11	42	11	42	28	68	45	94	62		
17	12	43	12	43	29	69	46	95	63		
18	12	44	12	44	29	70	46	96	63		
19	13	45	13	45	30	71	47	97	64		
20	14	46	14	46	31	72	48	98	65		
21	14	47	14	47	31	73	48	99	65		
22	15	48	15	48	32	74	49	100	66		
23	16	49	16	49	33	75	50	105	69		
24	16	50	16	50	33	76	50	110	72		
25	17	51	17	51	34	77	51	115	76		
26	17	52	17	52	34	78	51	120	79		

A full box 14 x 20, 112 sheets, will cover approximately 170 square feet.

**20 x 28 FLAT SEAM TIN
ROOFING**

Table showing quantity of 20 x 28 tin required to cover a given number of square feet with flat seam tin roofing.

In the following estimates all fractional parts of a sheet are treated as a full sheet.

Full size of sheet 20 x 28, locked at ends.

Covering surface, 490 $\frac{1}{2}$ square inches, or 3.41 square feet.

No. Sq. Feet	Sheets Req'd		No. Sq. Feet	Sheets Req'd		No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required	
	No. Sq. Feet	Sheets Req'd		No. Sq. Feet	Sheets Req'd		No. Sq. Feet	Sheets Required		No. Sq. Feet	Sheets Required		No. Sq. Feet	Sheets Required
1	1	27	8	53	16	79	24	125	37	310	91			
2	1	28	9	54	16	80	24	130	39	320	94			
3	1	29	9	55	17	81	24	135	40	330	97			
4	2	30	9	56	17	82	25	140	42	340	100			
5	2	31	10	57	17	83	25	145	43	350	103			
6	2	32	10	58	18	84	25	150	44	360	106			
7	3	33	10	59	18	85	29	155	46	370	109			
8	3	34	10	60	18	86	26	160	47		112			
9	3	35	11	61	18	87	26	165	49					
10	3	36	11	62	19	88	26	170	50					
11	4	37	11	63	19	89	27	175	52					
12	4	38	12	64	19	90	27	180	53					
13	4	39	12	65	20	91	27	185	55					
14	5	40	12	66	20	92	27	190	56					
15	5	41	13	67	20	93	28	195	58					
16	5	42	13	68	20	94	28	200	59					
17	5	43	13	69	21	95	28	210	62					
18	6	44	13	70	21	96	29	220	65					
19	6	45	14	71	21	97	29	230	68					
20	6	46	14	72	22	98	29	240	71					
21	7	47	14	73	22	99	30	250	74					
22	7	48	15	74	22	100	30	260	77					
23	7	49	15	75	22	105	31	270	80					
24	8	50	15	76	23	110	33	280	83					
25	8	51	15	77	23	115	34	290	86					
26	8	52	16	78	23	120	36	300	88					

A full box 20 x 28, 112 sheets, will cover approximately 380 square feet.

**20 x 28 STANDING SEAM TIN
ROOFING**

Table showing quantity of 20 x 28 tin required to cover a given number of square feet with standing seam tin roofing.

In the following estimates all fractional parts of a sheet are treated as a full sheet.

Full size of sheet 20 x 28, locked at ends.

Covering surface, 474.9 square inches, or 3.3 square feet.

No. Sq. Feet	Sheets Req'd		No. Sq. Feet	Sheets Req'd		No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required		No. of Square Feet	Sheets Required	
	No. Sq. Feet	Sheets Req'd		No. Sq. Feet	Sheets Req'd		No. Sq. Feet	Sheets Required		No. Sq. Feet	Sheets Required		No. Sq. Feet	Sheets Required
1	1	27	9	53	16	79	24	125	37	310	91			
2	1	28	9	54	16	80	24	130	39	320	94			
3	1	29	9	55	17	81	24	135	40	330	97			
4	2	30	9	56	17	82	25	140	42	340	100			
5	2	31	10	57	17	83	25	145	43	350	103			
6	2	32	10	58	18	84	25	150	44	360	106			
7	3	33	10	59	18	85	29	155	46	370	109			
8	3	34	10	60	18	86	26	160	47		112			
9	3	35	11	61	18	87	26	165	49					
10	4	36	11	62	19	88	26	170	50					
11	4	37	12	63	19	89	27	175	52					
12	4	38	12	64	19	90	27	180	53					
13	4	39	12	65	20	91	27	185	55					
14	5	40	13	66	20	92	27	190	56					
15	5	41	13	67	20	93	28	195	58					
16	5	42	13	68	20	94	28	200	59					
17	5	43	13	69	21	95	28	210	62					
18	6	44	13	70	21	96	29	220	65					
19	6	45	14	71	21	97	29	230	68					
20	6	46	14	72	22	98	29	240	71					
21	7	47	14	73	22	99	30	250	74					
22	7	48	15	74	22	100	30	260	77					
23	7	49	15	75	22	105	31	270	80					
24	8	50	15	76	23	110	33	280	83					
25	8	51	15	77	23	115	34	290	86					
26	8	52	16	78	23	120	36	300	88					

A full box 20 x 28, 112 sheets, will cover approximately 370 square feet.

CHARCOAL BRIGHT TIN PLATE



We carry a large stock at all times of four different grades of Charcoal Bright Tin Plates in the 20 x 28 size from IC to IXXXX thickness.

In two qualities we carry as well a number of odd sizes and 14 x 20 suitable for sap buckets, boilers and other special lines of pieced and stamped tinware.

J. M. & L. A. OSBORN EXTRA BRIGHT

This is a strictly high grade plate, heavily coated, hand cleaned through rye flour, very carefully handled and assorted, insuring plates perfect in coating with a beautiful lustre. This brand is tissue paper packed.

IC to IXXXX 20 x 28 carried in stock at all times.

GOLDEN STAR BRIGHT

Like our best brand this grade is very carefully coated, cleaned and handled, insuring plates perfect in surface and finish. It does not carry quite as much coating but is tissue paper packed and fully equal to the old Culland grade in amount of coating carried and general appearance.

IC to IXXXX 20 x 28 and IC and IX 14 x 20 carried in stock.

IX 10 x 20, 14 x 22, 16 x 16, 16 x 20 and 32 x 22 carried in stock.

IX and IXX 12 x 24, 14 x 24, 14 x 28 and 14 x 31 carried in stock.

OSBORN BRIGHT

This brand is offered where a strictly first class charcoal bright plate is required but where it is not necessary to use a plate with the special lustre finish. It is fully equal to the old Melvin grade in working qualities and general appearance and finish.

IC to IXXXX 20 x 28 and IC and 14 x 20 and 10 x 20 carried in stock.

CHARCOAL BRIGHT

This brand is suitable for general work and especially for high grade furnace pipe requirements where a first class job is wanted.

IC-IX and IXX 20 x 28 carried in stock.

CHARCOAL BRIGHT WASTERS

We always have a good assortment of 20 x 28 wasters in the Golden Star, Osborn and Charcoal Bright qualities which we can offer at a liberal reduction in price. Slight defects in the surface of the coating are the principal imperfections and where the plates are to be cut into small pieces, or generally where the entire size of the sheet is not required for the article being made they can be used to good advantage and economically.

LARGE TINNED SHEETS

DAIRY, CHEESE VAT, AND MILK CAN STOCK

We have been supplying for a number of years AMERICAN MADE large tinned sheets fully equal in working qualities, coating, and general appearance to the celebrated COOKLEY K brand. In fact to produce these high grade sheets an entire crew of tin plate workers were secured from the COOKLEY K works and are now living in this country regularly making each week a large quantity of these plates.

We carry in stock at Cleveland the following gauges and sizes:

IXXXX	30 x 72	36 x 72	
D 4X	30 x 84	36 x 84	36 x 96

We are able to ship promptly from the mill many other gauges and sizes and can also enter orders for special sizes, in lots of not less than 500 lbs. for execution and shipment in about four to six weeks.

BRIGHT TIN PLATE

HEATER PIPE SIZES

Mentor or Euclid Brand

We make a specialty of bright plates for heater pipe work as we use a great many ourselves in the manufacture of round pipe, elbows, register boxes, single wall pipe and fittings of all kinds.

You will find our stock always large and well assorted, including as it does many gauges and sizes in both primes and wasters. We can also enter orders for production at the mill and make shipments in four to six weeks.

Sizes and gauges carried in stock:

20 x 26	20 x 28	20 x 29½	20 x 32½	.....	90 lb. base	
20 x 26	20 x 26½	20 x 28	20 x 29½	20 x 32½	20 x 39	100 lb. base
20 x 28	20 x 29½	20 x 32½	20 x 39	.....	.....	107 lb. base
20 x 26	20 x 28	20 x 29½	20 x 32½	20 x 38½	20 x 39	128 lb. base
20 x 26	20 x 28	20 x 29½	20 x 32½	20 x 38½	20 x 39	135 lb. base

ODD SIZES

We always carry a good stock of many odd sizes and squares in coke bright plates and solicit inquiries for special sizes and qualities, including plates for stamping and drawing purposes, for production at the mill.

Sizes and gauges carried in stock:

12 x 24	12 x 26	14 x 20	14 x 22	14 x 28	14 x 30	15 x 15	16 x 16	
17 x 17	18 x 18	20 x 20	22 x 22	24 x 24	.....	.....	.....	100 lb. base
12 x 24	14 x 28	14 x 30	.....	.....	.....	.....	.....	135 lb. base
12 x 24	14 x 28	14 x 30	.....	.....	.....	.....	.....	155 lb. base

TAGGERS TIN PLATES

55 pound base, or No. 38 gauge 20 x 28 carried in stock.

SPECIAL GRADES COKE BRIGHT PLATES

We can enter for production at the mill special finishes and qualities of coke bright plates, such as Best Coke, Silver Finish, Open Hearth Base, etc. We are also in position to furnish tin plate lacquered on one side or two sides. Prices on application.

STANDARD WEIGHTS AND GAUGES OF TIN PLATES

Trade term.....	55-lb.	60-lb.	65-lb.	70-lb.	75-lb.	80-lb.	85-lb.	90-lb.	95-lb.	100-lb.
Nearest wire gauge, No.	38	37	36	35	34	33	32	31	31	30½
Weight, square foot, lbs. ....	.252	.275	.298	.322	.345	.367	.390	.413	.436	.459
Weight, box, 14 x 20, lbs.	55	60	65	70	75	80	85	90	95	100
Trade term					IC	IXL	IX	IIXX	IXXX	IXXXX
Nearest wire gauge, No.					30	28	28	27	26	25
Weight, square foot, lbs. ....					.491	.588	.619	.712	.803	.895
Weight, box, 14 x 20, lbs.					107	128	135	155	175	195
							IXXXXX	IXXXXXX	IXXXXXXX	
Nearest wire gauge, No.						24	23	23	23	
Weight, square foot, lbs. ....						.987	1.079	1.079	1.171	
Weight, box, 14 x 20, lbs.						215	235	235	255	

STANDARD WEIGHTS AND GAUGES OF D PLATES

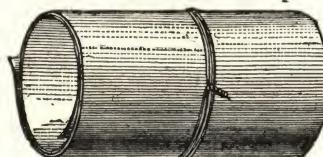
Trade term	DC	DX	DXX	DXXX	DXXXX
Nearest wire gauge, No.	28	26	24	23	22
Actual weight, per sq. ft., lbs.	637	826	.962	1.10	1.23
Nearest equivalent in I plates.	IX	IXXX	IXXXXX	IXXXXXX	IXXXXXXX
14 x 20, 112 sheets, wt. box, lbs.	139	180	210	240	268
12½ x 17, 100 sheets, wt. box, lbs.	94	122	142	162	182
17 x 25, 50 sheets, wt. box, lbs.	94	122	142	162	182
15 x 21, 100 sheets, wt. box, lbs.	140	181	211	241	271

NET WEIGHT PER BOX TIN PLATES

Basis 14 x 20, 112 Sheets

Trade Term	80 lb.	85 lb.	90 lb.	95 lb.	100 lb.	107	128	135	155	175	195
Weight per box, lbs.	80	85	90	95	100	107	128	135	155	175	195
Size of Sheets	Sheets per Box										
10 x 14	225	80	85	90	95	100	107	128	135	155	175
10 x 20	225	114	121	129	136	143	153	183	193	221	250
11 x 22	225	138	147	156	164	172	184	222	234	268	302
11½ x 23	225	151	161	170	179	189	202	242	255	293	331
12 x 24	112	82	87	93	98	103	110	132	139	159	180
13 x 26	112	97	103	109	115	121	129	154	163	187	211
13½ x 19½	112	75	80	85	89	94	100	120	127	146	165
14 x 18¾	124	83	88	93	98	103	110	132	139	161	182
14 x 19¼	120	83	88	93	98	103	110	132	139	160	180
14 x 20	112	80	85	90	95	100	107	128	135	155	195
14 x 21	112	84	89	95	100	105	112	134	142	163	184
14 x 22	112	88	94	99	105	110	118	141	149	171	193
14 x 24	112	96	102	108	114	120	128	153	162	186	210
14 x 28	112	112	119	126	133	140	150	179	189	217	245
14 x 30	112	120	128	135	143	150	161	192	203	234	264
14 x 31	112	124	132	140	147	155	166	198	209	240	271
15 x 15	225	129	137	145	153	161	172	206	217	249	281
15 x 21	112	90	95	101	107	113	120	144	152	174	197
16 x 16	225	146	155	165	174	183	196	234	247	283	320
16 x 20	112	91	97	103	109	114	122	146	154	177	200
17 x 17	225	165	175	186	196	206	221	261	279	320	361
18 x 18	112	93	98	104	110	116	124	148	156	179	202
19 x 19	112	103	110	116	122	129	138	165	174	200	226
20 x 20	112	114	121	129	136	143	153	183	193	221	250
20 x 26	112			167	176	186	199	238	251		
20 x 26½	112				170	180	189	203	242	256	
20 x 28	112	160	170	180	190	200	214	256	270	310	350
20 x 29½	112				190	200	211	225	270	284	
20 x 32½	112				209	221	232	248	297	313	
20 x 36	112				231	244	257	275	329	347	
20 x 38½	112				248	261	275	294	352	371	
20 x 39	112				251	265	279	298	357	376	
21 x 21	112	126	134	142	150	158	169	202	213	244	276
22 x 22	112	138	147	156	164	172	184	221	234	268	302
23 x 23	112	151	161	170	179	189	202	242	255	293	331
24 x 24	112	164	175	185	195	204	220	263	278	319	360
26 x 26	112	193	205	217	229	241	258	309	326	374	422

SHEET COPPER



We always have a large stock of sheet copper in our warehouse and show below the various weights, finishes and size of sheets carried.

Weight Per Square Foot	Soft Sheet Copper	Soft Sheet Copper Tinned	Cold Rolled Sheet Copper	Cold Rolled and Polished Sheet Copper	Cold Rolled and Tinned Sheet Copper	Cold Rolled Tinned and Polished Sheet Copper	Soft Copper In Rolls
	Size of Sheets	Size Sheets	Size Sheets	Size Sheets	Size Sheets	Size of Sheets	Width
12 oz.	30 x 72		30 x 72		14 x 48	14 x 56	
12 oz.			12 x 96				
14 oz.	18 x 96	14 x 60	14 x 60	24 x 48	14 x 48	14 x 48	14 in.
14 oz.	20 x 96		18 x 96	26 x 72	24 x 72	14 x 56	16 in.
14 oz.	24 x 96		20 x 96	30 x 72	30 x 60	14 x 60	20 in.
14 oz.	28 x 96		24 x 96	30 x 96	30 x 72	24 x 48	
14 oz.	30 x 96		26 x 96			30 x 60	
14 oz.	36 x 96		28 x 96			30 x 72	
14 oz.			30 x 96				
14 oz.			36 x 96				
16 oz.	20 x 96		20 x 96	24 x 72	30 x 72	14 x 60	14 in.
16 oz.	24 x 96		24 x 96	30 x 72		24 x 72	16 in.
16 oz.	26 x 96		26 x 96	30 x 96		30 x 72	20 in.
16 oz.	28 x 96		28 x 96				
16 oz.	30 x 96		30 x 96				
16 oz.	34 x 96		36 x 96				
16 oz.	36 x 96						
18 oz.	30 x 96		24 x 96				
18 oz.	36 x 96		30 x 96				
20 oz.			30 x 96				
20 oz.			36 x 96				

CRIMPED SHEET COPPER



Sheets with slight corrugations or crimps $\frac{1}{8}$ -inch from center to center, running crosswise of sheets, are made from sheets No. 24 gauge and lighter, not exceeding 36 inches in width nor 144 inches in length.

The crimps improve the appearance of sheets for cornice work, etc., increase the rigidity of the material, but do not interfere with bending or forming.

Length of sheet before crimping..... 96 in.

Length after crimping..... 94 in.

Size of crimp..... $\frac{1}{8}$ in.

Crimping, extra cents per hundred pounds.

SCHEDULE OF EXTRAS FOR HOT ROLLED SHEET COPPER
ADOPTED MAY 24, 1906

Sizes of Sheets		Extras in Cents per Pound for Sizes and Weights Other than Base									
Width	Length	Base	Base	Base	Base	Base	1	2	3	6	9
Not wider than 30 inches	Not longer than 72 in...	Base	Base	Base	Base	Base	1	2	3	6	9
	Longer than 72 in ... {	Base	Base	Base	Base	Base	1	3	6	9	.....
	Not longer than 96 in ... {	Base	Base	Base	Base	Base	2	6	.....	.....	.....
	Longer than 96 in ... {	Base	Base	Base	Base	Base	2	6	.....	.....	.....
Wider than 30 inches, but not wider than 36 inches	Not longer than 72 in ... {	Base	Base	Base	Base	Base	2	4	7	10	.....
	Longer than 72 in ... {	Base	Base	Base	Base	Base	2	6	9	.....	.....
	Not longer than 96 in ... {	Base	Base	Base	Base	Base	1	3	.....	.....	.....
	Longer than 96 in ... {	Base	Base	Base	Base	Base	2	4	8	.....	.....
	Longer than 120 in ... {	Base	Base	Base	Base	Base	1	2	.....	.....	.....
Wider than 36 inches, but not wider than 48 inches	Not longer than 72 in ... {	Base	Base	Base	Base	Base	1	2	4	7	10
	Longer than 72 in ... {	Base	Base	Base	Base	Base	1	3	5	8	.....
	Not longer than 96 in ... {	Base	Base	Base	Base	Base	2	4	8	.....	.....
	Longer than 96 in ... {	Base	Base	Base	Base	Base	1	3	6	.....	.....
	Longer than 120 in ... {	Base	Base	Base	Base	Base	1	3	6	.....	.....
Wider than 48 inches, but not wider than 60 inches	Not longer than 72 in ... {	Base	Base	Base	Base	Base	1	3	6	11	.....
	Longer than 72 in ... {	Base	Base	Base	Base	Base	2	4	9	.....	.....
	Not longer than 96 in ... {	Base	Base	Base	Base	Base	1	3	6	.....	.....
	Longer than 96 in ... {	Base	Base	Base	Base	Base	1	3	6	.....	.....
	Not longer than 120 in ... {	Base	Base	Base	Base	Base	1	2	4	8	.....
Wider than 60 inches, but not wider than 72 inches	Not longer than 96 in ... {	Base	Base	Base	Base	Base	1	3	8	.....	.....
	Longer than 96 in ... {	Base	Base	Base	Base	Base	2	5	10	.....	.....
	Not longer than 120 in ... {	Base	Base	Base	Base	Base	1	1	3	8	.....
	Longer than 120 in ... {	Base	Base	Base	Base	Base	1	1	3	8	.....
Wider than 72 inches, but not wider than 108 inches	Not longer than 96 in ... {	1	1	3	6	.....	.....	.....	.....	.....	.....
	Longer than 96 in ... {	2	2	4	7	.....	.....	.....	.....	.....	.....
	Not longer than 120 in ... {	3	3	5	9	.....	.....	.....	.....	.....	.....
	Longer than 120 in ... {	3	3	5	9	.....	.....	.....	.....	.....	.....
Wider than 108 inches	Not longer than 132 in ... {	4	4	6	.....	.....	.....	.....	.....	.....	.....
	Longer than 132 in ... {	5	5	8	.....	.....	.....	.....	.....	.....	.....

EXTRAS

Circles, Segments and Pattern Sheets, three (3) cents per pound advance over prices of Sheet Copper required to cut them from.

Circles less than 8 inches in diameter five (5) cents per pound advance.

All Cold or Hard Rolled Copper, 14 oz. per square foot and heavier, one (1) cent per pound over the foregoing prices.

All Cold or Hard Rolled Copper, lighter than 14 oz. per square foot, two (2) cents per pound over the foregoing prices.

Cold Rolled and Annealed Copper Sheets and Circles, take the same price as Cold or Hard Rolled Copper of corresponding dimensions and thickness.

All Polished Copper, 20 inches wide and under one (1) cent per square foot advance over the price for Cold Rolled Copper.

All Polished Copper, over 20 inches wide, two (2) cents per square foot advance over the price for Cold Rolled Copper.

The Polishing extra for circles and segments to be charged on the full size of the sheet from which they are cut.

For Polishing both sides, double the above prices.

Cold Rolled Copper, prepared suitable for Polishing; same prices and extras as Polished Copper.

Planished Copper, one (1) cent per square foot more than Polished Copper.

TINNING

Tinning sheets, on one side, all sizes, per square foot, 3c. For tinning both sides, double the above price.

For tinning the edges of sheets, one or both sides, price shall be the same as for tinning all of one side of the specified sheet.

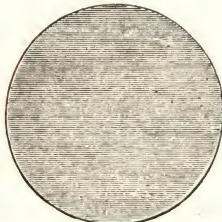
For tinning circles and segments, price is 3c per square foot upon the square of the circle, or the full size of the sheet from which the piece is cut.

TABLE SHOWING WEIGHTS OF COPPER IN COMPARISON WITH VARIOUS GAUGES

Adopted by the Association of Copper Manufacturers of the United States

Rolled Copper has specific gravity of 8.93. One cubic foot weighs 558.0125 pounds. One square foot, of 1 inch thick, weighs 46.51 pounds.

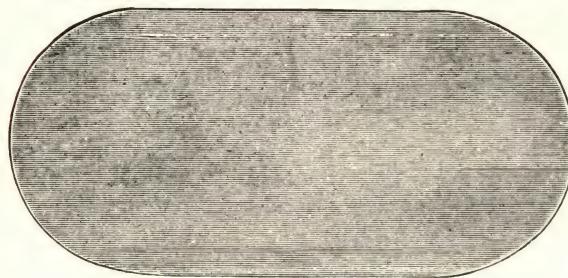
Stubs Gauge (nearest) No.	Thickness in Decimal Parts of one Inch	Oz. Per Square Foot	Sheets 14 x 48 Weight in Lbs.	Sheets 24 x 48 Weight in Lbs.	Sheets 30 x 60 Weight in Lbs.	Sheets 36 x 72 Weight in Lbs.	Sheets 48 x 72 Weight in Lbs.
35	.00537	4	1.16	2	3.12	4½	6
33	.00806	6	1.75	3	4.68	6¾	9
31	.0107	8	2.33	4	6.25	9	12
28	.0134	10	2.91	5	7.81	11¼	15
27	.0161	12	3.50	6	9.37	13½	18
26	.0188	14	4.08	7	10.93	15¾	21
25	.0215	16	4.66	8	12.50	18	24
24	.0242	18	5.25	9	14.06	20¼	27
22	.0269	20	5.83	10	15.62	22½	30
21	.0322	24	7	12	18.75	27	36
19	.0430	32	9.33	16	25	36	48
18	.0538	40	11.66	20	31.25	45	60
16	.0645	48	14	24	37.50	54	72
15	.0754	56	16.33	28	43.75	63	84
14	.0860	64	18.66	32	50	72	96
13	.095	70	.....	35	55	79	105
12	.109	81	.....	40½	63	91	122
11	.120	89	.....	44½	70	100	134
10	.134	100	.....	50	78	112	150
9	.148	110	.....	55	86	124	165
8	.165	123	.....	61	96	138	184
7	.180	134	.....	67	105	151	201
6	.203	151	.....	75½	118	170	227
5	.220	164	.....	82	128	184	246
4	.238	177	.....	88½	138	199	266
3	.259	193	.....	96	151	217	289
2	.284	211	.....	105½	165	238	317
1	.300	223	.....	111½	174	251	335
0	.340	253	.....	126½	198	285	380



TEA KETTLE BOTTOMS

14 OUNCE TEA KETTLE

Nos.	8	9
Round, flat bottom, diameter, inches.....	10	11



BOILER BOTTOMS

We carry in stock the following boiler flats:

14 oz.	12 x 23
14 oz.	13 x 24
16 oz.	13 x 24

Base price \$.....

EXTRAS

COPPER BOTTOMS AND FLATS

14-oz. to the square foot and heavier, base plus 4c per pound.

12-oz. and up to 14-oz. to the square foot, base plus 5c per pound.

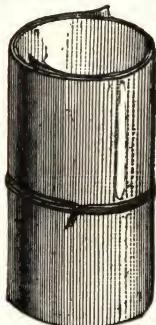
10-oz. and up to 12-oz. to the square foot, base plus 7c per pound.

Lighter than 10-oz. to the square foot, base plus 10c per pound.

Bottoms less than 8 inches diameter, 2c per pound additional to the above list.

Circles over 13 inches diameter, are not classed as Copper Bottoms.

Polished Copper Bottoms, Flats, 1c per square foot advance over the above prices, figured upon the square of the circle or the full size of the sheet from which they are cut.



SOFT SHEET BRASS IN ROLLS

Each Roll Contains from 50 to 75 Pounds

6, 8, 9, 10, 12, 14 in. wide, Nos. 14 to 36 B. & S. Gauge.

HARD AND HALF HARD HIGH SHEET BRASS IN ROLLS

6, 8, 10, 12 and 14 in. wide, Nos. 16 to 28 B. & S. Gauge.

SPRING SHEET BRASS IN ROLLS

8 in. wide, Nos. 14 to 34 B. & S. Gauge.

SOFT LOW BRASS FOR SPINNING, IN ROLLS

6, 8, 10, 12 and 14 in. wide, Nos. 17 to 32 B. & S. Gauge.

HARD ROLLED BRONZE FLAT SHEETS

6 in. wide, Nos. 8, 10, 14 and 16 B. & S. Gauge.

In lengths of 72 inches.

SOFT BRONZE FOR SPINNING, IN ROLLS

8 and 12 in. wide, Nos. 14 to 26 B. & S. Gauge.

Base prices and schedule of extras shown on page 31.

ROLL AND SHEET BRASS, BRONZE, LOW BRASS, ETC.

Base Price

High Brass	Cts. per lb.	Spring, Drawing and Spinning
Low Brass	Cts. per lb.	Brass
Bronze Gilding and Oreide.....	Cts. per lb.	Best Drawing and Spinning Brass

Cts. per lb.

Base Price

High Brass	Cts. per lb.	Spring, Drawing and Spinning
Low Brass	Cts. per lb.	Brass
Bronze Gilding and Oreide.....	Cts. per lb.	Best Drawing and Spinning Brass

Cts. per lb.

Extras Over Base Price

Brown & Sharpe's Gauge the Standard.

Com. } Wider High } than & Brass } inclu- g	In. 2	In. 12	In. 14	In. 16	In. 18	In. 20	In. 22	In. 24	In. 26	In. 28	In. 30	In. 32	In. 34	In. 36	In. 38	In. 40
To No. 20 inclusive	Base	.01	.03	.05	.07	.09	.11	.14	.17	.20	.24	.28	.33	.38	.43	*
Nos. 21, 22, 23 and 24	Base	.02	.04	.06	.08	.10	.12	.15	.18	.21	.25	.29	.34	.39	.46	*
Nos. 25, 26.	.01	.02½	.05	.07	.09	.11	.13	.16	.19	.22	.26	.30	.35	.41	.49	*
Nos. 27, 28.	.01	.03	.06	.08	.10	.12	.14	.17	.20	.23	.27	.31	.36	.43	.53	*
No. 29 .....	.01½	.03½	.06½	.08½	.10½	.12½	.14½	.17½	.20½	.23½	.....	.....	.....	.....	.....	.....
No. 30 .....	.02	.04	.07	.09	.11	.13	.15	.18	.21	.24	.....	.....	.....	.....	.....	.....
No. 31 .....	.02½	.04½	.07½	.09½	.11½	.13½	.15½	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 32 .....	.03	.05	.08	.10	.12	.14	.16	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 33 .....	.03½	.05½	.08½	.10½	.12½	.14½	.16½	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 34 .....	.04	.06	.09	.11	.13	.15	.17	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 35 .....	.04½	.06½	.09½	.11½	.13½	.15½	.17½	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 36 .....	.05	.07	.10	.12	.14	.16	.18	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 37 .....	.05½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 38 .....	.06	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Special price not less than 58 cents over base.

PLATERS' METAL.

(Over 2 Inches Wide to 6 Inches Wide.)

Metal thinner than No. 38 is Platers' Metal, extra over base price as follows:

Nos.	39	40	1/0	2/0	3/0	4/0
			.0025	.002	.0015	.001
Brass	Per lb., \$0.22	.36	.50	.55	.61	.68
Bronze	Per lb., .23	.39	.55	.60	.66	.73

All Metal heavier than No. 6 gauge, listed and charged as sawed metal whether sheared, slit or sawed.

Metal between gauges takes price of nearest gauge.

Circles cut from above metal, over 6 in. and not exceeding 12 in. diameter, No 10 gauge and thinner.....	6c list advance
Circles cut from above metal, over 6 in. and not exceeding 12 in. diameter, thicker than No. 10.....	10c list advance
Circles cut from above metal, 6 in. and smaller and larger than 12 in. diam., special prices quoted upon application.	

Segments, pattern sheets, and irregular shape blanks, special prices quoted upon application.

Polishing one side, No. 16 and heavier..... Per pound, 4c list advance
Polishing one side, lighter than No. 16..... Per square foot, 10c list advance

Polishing both sides, double the above prices.

PLATERS' METAL—Continued

Sheet metal extra leveled, special prices quoted upon application.

Sheet metal, 14 in. wide and narrower, cut to uniform specific lengths, add the following list advances:

<u>8 in. to 2 ft.</u>	<u>2 ft. to 4 ft.</u>	<u>4 ft. to 6 ft.</u>	<u>6 ft. to 8 ft.</u>	<u>8 ft. to 10 ft.</u>
No Charge	1c.	2c.	4c.	6c.

10 ft. and over, special prices quoted upon application, not less than 6c. list advance.

Sheet metal, 14 in. wide and narrower, cut to specific lengths of less than 24 in. or any multiple thereof, no charge for cutting.

Sheet metal, 14 in. wide and narrower, cut to specific lengths, shorter than 8 in., special prices quoted upon application, not less than 1c list advance.

Sheet metal, wider than 14 in., cut to uniform specific lengths, special prices quoted upon application, not less than prices for cutting 14 in. wide.

SLITTING

Over $\frac{1}{2}$ in. to 2 in. inclusive, Nos. 12 to 28 inclusive.....	1c per lb.
Over $\frac{3}{4}$ in. to $\frac{1}{2}$ in. inclusive, Nos. 12 to 28 inclusive.....	2c per lb.
$\frac{3}{4}$ in. and narrower, Nos. 12 to 28 inclusive, not less than	6c per lb.
Over $\frac{1}{2}$ in. to 2 in. inclusive, Nos. 29 to 32 inclusive.....	1 $\frac{1}{2}$ c per lb.
Over $\frac{3}{4}$ in. to $\frac{1}{2}$ in. inclusive, Nos. 29 to 32 inclusive.....	3c per lb.
$\frac{3}{4}$ in. and narrower, Nos. 29 to 32 inclusive, not less than.....	12c per lb.
Over $\frac{1}{2}$ in. to 2 in. inclusive, No. 33 and thinner.....	3c per lb.
Over $\frac{3}{4}$ in. to $\frac{1}{2}$ in. inclusive, No. 33 and thinner.....	6c per lb.
$\frac{3}{4}$ in. and narrower, No. 33 and thinner, not less than.....	18c per lb.
Slit Metal , cut to particular lengths, add to above per lb. additional.....	5c per lb.

SAWING

Over 3 in. wide.....	3c per lb.
Over 1 in. to 3 in.....	4c per lb.
Over $\frac{1}{2}$ in. to 1 in.....	5c per lb.
$\frac{1}{2}$ in. and narrower	8c per lb.

Sawed Metal, cut to particular lengths, add to the above:

24 in. and over	5c	4 in. to 6 in.....	9c
12 in. to 24 in.....	6c	2 in. to 4 in.....	10c
9 in. to 12 in.....	7c	1 in. to 2 in.....	12c
6 in. to 9 in.....	8c	Shorter than 1 in., special.	

All Metal heavier than No. 6, B. & S. gauge, listed and charged as sawed metal, whether slit or sawed.

Drawn Strips 4c per lb. above price of Slit Brass. (Drawn Strips are all metal drawn in dies, thinner than No. 8, B. & S. Gauge; No. 8, B. & S. and thicker, listed and sold as rectangular rod.)



SHEET ZINC

PRICES FOR SHEET ZINC, IN 600 POUND CASKS

Gauge	Widths	Lengths	Price per 100 Pounds
Nos. 9 to 19, inclusive.	32 to 52 in.	72 to 96 in.	\$.....
No. 8	32 to 40 in.	84 in.	.....
No. 7	32 to 40 in.	84 in.	.....
No. 6	32 to 40 in.	84 in.	.....
No. 5	32 to 40 in.	84 in.	.....
No. 4	36 in.	84 in.	.....
No. 3	36 in.	84 in.	.....

EXTRAS IN CENTS PER 100 POUNDS

The extra on No. 4 36 x 84 is \$1.20 per hundred pounds.

The extra on No. 3 36 x 84 is \$2.80 per hundred pounds.

Price on No. 2 will be given on application.

Numbers 20 to 23 will be packed in 500-pound boxes, for which an additional charge will be made.

Nos.	5	6	7	8	9-20
32 to x 84	50	25	15	10	none
40					
24 x 84	80	25	15	10	none
26 x 84	95	25	15	10	none
28 x 84	90	75	50	35	none
30 x 84	80	65	45	30	none
48 x 84	80	25	15	10	none
50 x 84	85	25	15	10	none
52 x 84	95	25	15	10	none
58-60 x 84	300	150	90	75	60
36 x 96	70	30	20	10	none
48 x 96	105	65	20	10	none
36 x 108	65	45	30	20	none
48 x 108	130	75	40	35	25
62 x 84 } 64 x 84 }	extra	given	on	appli-	cation

EXTRA CHARGES FOR SMALL PACKAGES AND FOR SELECTED ZINC

100 lb. casks (all Nos. up to No. 12 inclusive), per 100 lbs. \$0.15

200 and 300 lb. casks (all Nos. up to No. 14 inclusive), per 100 lbs. 10

Orders for a less quantity than 400 pounds are subject to an extra charge of \$0.20 per 100 pounds.

"Selected Sheets" for lithographers and paper makers' use:

Zinc, No. 9 and 10, selected on one side, \$3.50 per 100 lbs.; selected on both sides, \$4.50 per 100 lbs.

Zinc, No. 11 to 15 inclusive, selected on one side, \$2.50 per 100 lbs.; selected on both sides, \$3.50 per 100 lbs.

"Selected Plates," No. 16 and upwards, for photo-engravers' and etchers' use, \$3.50 per 100 lbs.

Prices for rolled zinc battery plates, special sizes, extra heavy zinc, circles and pattern sheets, zincs for Leclanche battery furnished on application.

Prices for sizes and numbers not contained in foregoing list, sizes and numbers left blank, and zinc cut to order, will be given on application.

Extra charges for sizes and numbers not mentioned will be given on application.

TABLE SHOWING THE GAUGE NUMBER OF ZINC IN COMPARISON WITH REGULAR STANDARD GAUGES

ILLINOIS Zinc Co.'s ZINC GAUGE			AMERICAN OR BROWN & SHARPE		BIRMINGHAM OR STUBS		UNITED STATES STANDARD	
No.	Square Foot in Lbs.	Thickness in Inches	No.	Approximate Thickness in Inches	No.	Approximate Thickness in Inches	No.	Approximate Thickness in Inches
3	.22	.006	34	.0063	35	.005	38	.0062
			33	.0070	34	.007	37	.0066
4	.30	.008	32	.0079	33	.008	36	.0070
			31	.0089			35	.0078
					32	.009	34	.0086
5	.37	.010 1/100	30	.0100	31	.010	33	.0093
			29	.0112	30	.012	32	.0101
6	.45	.012	28	.0126	29	.013	31	.0109
7	.52	.014	27	.0141	28	.014	29	.0140
8	.60	.016	26	.0159	27	.016	28	.0156
			25	.0179	26	.018	27	.0171
9	.67	.018	24	.0201	25	.020	26	.0187
10	.75	.020 1/50	23	.0225	24	.022	25	.0218
11	.90	.024	22	.0253	23	.025	24	.0250
12	1.05	.028	21	.0284	22	.028	23	.0281
13	1.20	.032	20	.0319	21	.032	22	.0312
14	1.35	.036	19	.0353	20	.035	21	.0343
15	1.50	.040 1/25	18	.0403			20	.0375
16	1.68	.045	17	.0452	19	.042	19	.0437
17	1.87	.050	16	.0508	18	.049	18	.0500
18	2.06	.055	15	.0570	17	.058	17	.0562
19	2.25	.060 1/17	14	.0640	16	.065	16	.0625
20	2.62	.070	13	.0719	15	.072	15	.0703
21	3.00	.080	12	.0808	14	.083	14	.0781
22	3.37	.090	11	.0907	13	.095	13	.0937
23	3.75	.100 1/10	10	.1018	12	.109	12	.1093
24	4.70	.125 1/8	9	.1144	11	.120	11	.1250
			8	.1284	10	.134	10	.1406
			7	.1442	9	.148	9	.1562
			6	.1620	8	.165	8	.1718
			5	.1819	7	.180	7	.1875
			4	.2043	6	.203	6	.2031
			3	.2294	5	.220	5	.2187
					4	.238	4	.2343
25	9.40	.250 1/4	2	.2576	3	.259	3	.2500
					2	.284	2	.2656
			1	.2893	1	.300	1	.2812
			0	.3249	0	.340	0	.3125
26	14.00	.375 3/8	000	.4096	000	.425	000	.3750
27	18.75	.500					0000000	.5000
28	37.50	1.000						

Second Section

FLAT SHEETS

Special Quality Base

Special Coated Products

Genuine Charcoal Iron

Black, Galvanized and Terne Coated

Genuine Old Fashioned Wrot Iron

Black and Galvanized

Toncan Metal

Black and Galvanized

Galvanized Steel

Aluma, Aluminum Coated

Leadaloyd



BLACK, GALVANIZED AND TERNE COATED SHEETS

We have the honor of being the first, in this country, to market, as well as being instrumental in assisting to resurrect the art of producing the old fashioned "Genuine Charcoal Iron" Sheets. Since the substitution of steel sheets made by the cheaper methods known as the Bessemer and Open Hearth processes, there have arisen many complaints and statements as to the inferiority of sheets generally supplied—this with justification. On account of the clamor for that "good as we used to get" quality of years ago, we recognized a growing demand for "Genuine Charcoal Iron," and have been supplying it for many years for all purposes where quality, workability and long wear are recognized rather than price. Today this product is the same chemically as the old imported stock.

METHOD OF PRODUCTION

The raw material is placed in an old-style open knobbling fire in layers, alternating with layers of charcoal made from selected hard wood. By the combustion of this fuel and the efforts of the workman, who is known as a "knobbler," the raw materials are reduced to the form of a ball, consisting of a spongy mass of almost chemically pure iron, but containing, mechanically held in the pores, a quantity of molten cinder or slag. This cinder must be removed, and in order to effect this separation, the ball, at the expiration of the knobbling process, is quickly taken to the anvil of a very large steam hammer; here it is given a number of heavy blows, expelling the greater portion of the slag and forming the knobbler's ball into a square block or cake of iron, which, however, still contains a small portion of the slag. In order to get rid of this impurity the block, or "bloom," as it is called, is heated to a white heat and again taken to the hammer for a second hammering, after which it is "roughed off" in the mill into a long slab, which is cut up into short lengths for piling.

These short bars are then piled or faggoted and placed in the bar furnace where they are re-heated and re-rolled into sheet bars.

Sheets supplied in Black, Galvanized and Terne Coated in all the standard gauges and sizes.

For standard sizes, gauges, weight of sheets and bundles, and number of sheets per bundle, see tables on pages 71 to 74.



BLACK OR GALVANIZED SHEETS

The merits of this product are well known. These sheets are made from **Iron** Bars, and by the first known process of rolling sheets, long before the Bessemer or Open Hearth steel processes were discovered.

Time has tested it and proven its lasting qualities. The grain of "Genuine Old Fashioned Wrot Iron" is very open or porous, and not as close as in steel; hence this material permits of the paint or other coatings used to work into the body of the sheet, thus putting on a coating which resists atmospheric conditions. This is likewise true of this product when galvanized—the same being saturated with spelter, and not merely a coating on the surface as is the case with steel.

RUST-RESISTING
DURABLE



ANTI-CORROSIVE
ECONOMICAL

BLACK OR GALVANIZED SHEETS

This is a rust-resisting product particularly adapted for exposed sheet metal work. It fills an actual, long recognized want and is certain to prove a welcome acquisition to all metal users. Steel, in one form or another, has been the most common of metals because of its cheapness; but its susceptibility to corrosion and rust has so hampered its usefulness as to prove a serious obstacle to its value.

In the successful production of "Toncan Metal," there has been created a new condition, enabling us to offer metal sheets which overcome these objections to a remarkable degree.

We do not claim "Toncan Metal" to be absolutely incorrodible, but we do say it is far superior in rust-resisting properties to the best **Steel** sheets. On account of its combination of excellent working qualities, strength, life and fibre, it is especially well adapted for cornice work, roofing, siding, ridge roll, eaves trough, conductor pipe, etc.

For standard sizes, gauges, weight of sheets and bundles, and number of sheets per bundle, see tables on pages 71 to 74.

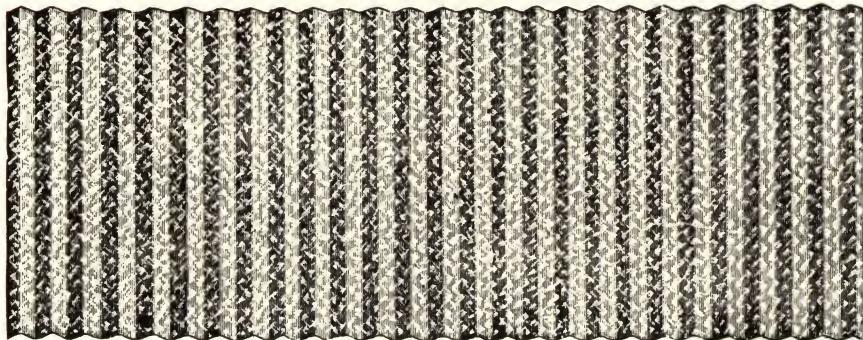


GALVANIZED STEEL SHEETS



This brand has enjoyed a most favorable reputation for a number of years in all parts of the country. Sheets are made from the best and softest base, especial attention being paid to the selection of sheet bars; the most modern and scientific methods are employed in rolling and coating. The galvanizing is the heaviest and most reliable; sheets are true to gauge, uniform in working quality and trustworthy in every respect.

GALVANIZED—3-16 IN. CRIMPED SHEETS

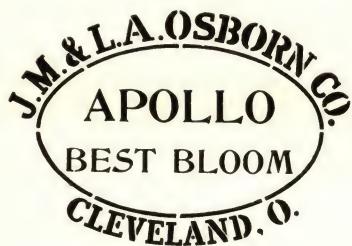


We show above a full size view of Galvanized Crimped Sheets. Our crimping machine has a capacity of 24 gauge material and lighter, sheets of any length crimped crossways up to and including 36 inches in width. Crimping adds greatly to the appearance of the sheet as well as taking out all buckles which are always present in regular galvanized stock. It also has a tendency to stiffen the sheet. The crimping does not interfere with the bending or working of the sheet.

Price per 100 pounds, extra.....\$.....



This is a high grade product especially suitable for Sap Pan requirements.



We are always prepared to supply this old and well-known brand.

For standard sizes, gauges, weight of sheets and bundles and number of sheets per bundle, see tables on pages 71 to 74.

OSBORN AUTOMOBILE SPECIAL CHARCOAL TINNED SHEETS

These are highly charcoal finished sheets, intended primarily for the manufacture of automobile and motor-boat gasoline tanks; also recommended for evaporator pans and other similar uses where quality and durability are required.

All of this stock is made from a special tough and ductile base to withstand forming and double seaming. Each sheet is carefully and heavily coated with the purest and richest of imported block tin.

This material is rolled in U. S. S. gauges Nos. 16 to 30 inclusive, ranging in widths of 5 to 48 inches inclusive, by lengths 60 to 96 inches inclusive, and are always furnished in prime quality without extra charge for the exclusion of wasters. However, if desired, we will furnish wasters as accumulated in the production of said primes at a price considerably less than primes.

All Osborn Automobile Special Charcoal Tinned Sheets are packed in heavy wood cases and between all sheets is placed tissue paper so that the mirror-finished surfaces will not become marred while in transit.

Owing to the smooth surfaces of this stock, paint or enamel will adhere perfectly, which is a feature desired by all automobile manufacturers. For many years we have supplied the wants of the most critical buyers, and in all cases **Osborn Automobile Special Charcoal Tinned Sheets** have given perfect satisfaction.



Used in Automobile Construction. Increases Output; Decreases Cost

These are special analysis steel sheets, into which has been incorporated a coating treatment of Aluminum-Alloyed Metal, thus producing a practically perfect surface, highly finished, and which can be given a beautiful finish with light body of paint.

Aluma Sheets are highly finished, designed especially for automobile bodies, hoods, guards, dashes, fenders, panels, battery boxes, drip pans, mufflers, etc. Being as smooth as any amount of finishing could make them, need only a primer, one-color coat and rubbing and finishing varnish.

Aluma Sheets are strong, durable, scaleless, rust-resisting, smooth. Paint adheres firmly.

They have the strength of steel, with the attractiveness of pure aluminum, at one-fifth its cost.

Aluma Sheets can be stamped, drawn, pressed, double-seamed or soldered, and are superior in quality to any other sheet on the market—a fact that must appeal strongly to the manufacturer who prides himself on the merits of his car.

Estimated Weights of Aluma Sheets

U. S. Standard Gauge. Weight per Sheet in Pounds.

U. S. Gauge	16	18	20	22	24	26	27	28
Lbs. per Sq. Ft.	2.50	2.00	1.50	1.25	1.00	.75	.6875	.625
Thickness, Inches	$\frac{1}{16}$	$\frac{1}{20}$	$\frac{3}{80}$	$\frac{1}{32}$	$\frac{1}{40}$	$\frac{3}{60}$	$\frac{11}{640}$	$\frac{2}{64}$
Size of Sheet	WEIGHT OF SHEET							
24 x 96	40.00	32.00	24.00	20.00	16.00	12.00	11.00	10.00
101	42.08	33.67	25.25	21.04	16.84	12.63	11.57	10.52
108	45.00	36.00	27.00	22.50	18.00	13.50	12.38	11.25
120	50.00	40.00	30.00	25.00	20.00	15.00	13.75	12.50
26 x 96	43.33	34.67	26.00	21.67	17.34	13.00	11.92	10.83
101	45.59	36.47	27.35	22.79	18.24	13.68	12.54	11.40
108	48.75	39.00	29.25	24.37	19.50	14.63	13.41	12.19
120	54.17	43.33	32.50	27.08	21.67	16.25	14.90	13.54
28 x 96	46.67	37.33	28.00	23.33	18.67	14.00	12.83	11.67
101	49.09	39.28	29.46	24.55	19.64	14.73	13.50	12.27
108	52.50	42.00	31.50	26.25	21.00	15.75	14.44	13.13
120	58.33	46.67	35.00	29.17	23.33	17.50	16.04	14.58
30 x 96	50.00	40.00	30.00	25.00	20.00	15.00	13.75	12.50
101	52.60	42.08	31.56	26.30	21.04	15.78	14.47	13.15
108	56.25	45.00	33.75	28.12	22.50	16.88	15.47	14.06
120	62.50	50.00	37.50	31.25	25.00	18.75	17.19	15.63
36 x 77	48.13	38.50	28.88	24.06	19.25	14.44	13.23	12.03
96	60.00	48.00	36.00	30.00	24.00	18.00	16.50	15.00
108	67.50	54.00	40.50	33.75	27.00	20.25	18.56	16.88
120	75.00	60.00	45.00	37.50	30.00	22.50	20.63	18.75

ALUMINUM COATED STEEL SHEETS

(HOT PROCESS)

Adapted for Gas Furnaces, Smoke Pipe, Chimney Tops; all forms of Outside Gutters, Valleys, Conductors, and Roofing; Range Reservoirs and Oven Linings

**Will not Rust in Ten Years' Exposure without Painting
Coating will not Smoke off from Heating Red**

PERTINENT POINTS OF ALUMINUM COATED SHEET STEEL

Coating of steel with our process not only means the application of a coating to the surface of the steel, but the amalgamation of the coating and the base. For instance: Temperature of fusion, aluminum, 1400 degrees F.; spelter, 680 degrees F. The intense heat attainable and the fine grained metal, aluminum, permits of great fluidity—like water. Such high temperature in galvanizing would destroy the coating metal—spelter, which is coarse grained, comparatively.

The aluminum composition, or rather the aluminum in the composition, being of a searching and permeating nature (like spirits of turpentine on the human body), enters the pores of the steel when the sheets are in the "bath" where the pores are expanded by the great heat. When the sheets are withdrawn into the atmosphere these pores congeal with the aluminum in them. The coating metal flows freely. That is the reason it is not "caked" on the surface to fracture and flake, like galvanized, when an edge is turned in working.

A vessel made of Aluminum Coated Sheet Steel will not sweat its liquid contents, which is proof that the moisture, when the sheet is used for exposed work, will not get to the base of the sheet. The element of corrosion in the steel is inert; that is why it needs no paint to protect it. It is advisable to do without painting.

The temperature necessary to apply the coating is insufficient to melt off the coating after amalgamation process. It can be heated red without destroying the coating. Because of this distinctive quality these sheets are unsurpassed for range, stove and furnace work. Chimney tops of this metal do not lose their protection by becoming heated.

Pure aluminum sheets, i.e., sheet aluminum, do not permit of soldering by the usual methods. Our composition of aluminum has been alloyed with other metals to overcome this one deficiency, and for that reason can be soldered as freely as tin plate with ordinary fluxes.

A remarkable fact that can be substantiated is that unprotected steel or iron nails and sheared edges take on a coating of aluminum in connection with Aluminum Coated Sheet Steel when used in exposed work, unpainted, where the elements come in contact with it. Scientific explanations vary, but it is generally accepted that aluminum has an affinity for the things in nature and is attracted galvanically to the uncoated portions.

We employ "hand-dipping" method, using low carbon, open hearth, cold rolled and annealed steel as a base for our sheets.

Standard Sizes—Gauge No. 14 to 30 inclusive, 24, 26, 28 or 30 inches wide, and 72, 84, 96 or 120 inches long.

Extreme Sizes—36 x 120 inches:
Special charge for pattern sheets.

Additional Prices on Extra Sizes—No. 19 and lighter, 24 in. to 12 in., 20 cents per 100 lbs.; No. 19 and lighter, 32 in. to 36 in., 20 cents per 100 lbs.



A soft steel sheet coated with a special lead-alloyed metal, their use being particularly adapted for the manufacture of automobile and carriage bodies, panels, fenders, hoods, mufflers, battery and tool boxes, dashes; also for metal furniture, such as dental and surgical cabinets.

Also very desirable for cornice and valley work of all buildings, on account of their long lengths, which saves many soldered seams and time.

Leadaloyd Sheets being of smooth surface, need only a primer, one-color coat and rubbing and finishing varnish is all that is necessary for automobile work.

**SOFT, STRONG, DURABLE, SCALELESS; NO OIL TO BE REMOVED;
NO RUST TO BE SCOURED OFF**

Supplied regularly in gauges 16 to 30½, sizes 10 to 36 inches wide, not longer than 120 inches. Surfaces finished bright dry or dark oil as may be desired.

All put up in bundles of about 150 pounds each size, or if desired we will ship in crated form at a nominal extra charge.

BLACK SHEETS

of

Common and Special Finished Surfaces

For the Use of

All Sheet Metal Workers

Automobile Manufacturers

and

Electrical Companies

Black Tin Mill Specialties

Our Line of Tin Mill Specialties is very extensive, particular attention being paid to products for special requirements.

We make a specialty of special analysis, Extra Soft Steel for difficult work, such as forming, bending, stamping, seaming, drawing, etc.

Blued, Polished and Planished Black Sheets

For Use in the Manufacture of

Elbows

Roasters

Stove Pipe

**Stove and Range Bodies
Locomotive and Engine Jackets**



Made from either soft Bessemer or Open Hearth base; hot rolled, open annealed. Furnished in 16 gauge and heavier.



Made from either soft Bessemer or Open Hearth base, specially manufactured for sheet purposes; one pass cold rolled and box annealed. Furnished in gauges 10 to 30.



Made especially for sap pan requirements. Very tough and ductile.

For standard sizes, gauges, weight of sheets and bundles, and number of sheets per bundle, see tables on pages 75 to 79.

ELECTRICAL SHEETS

This grade is thoroughly suitable for the manufacture of armatures, and for all ordinary electrical work, such as lamps. Its electrical efficiency is not guaranteed.



This is used extensively for transformers and high speed machines. Its electrical efficiency is much superior to the preceding grade. We guarantee our "Electrical High Speed" to show total iron losses at 60 cycles not exceeding the following:

Nos.....	30	29	28	27	26	
4000B.....	.400	.400	.415	.432	.451	Watts per lb.
6000B.....	.750	.750	.785	.822	.864	Watts per lb.

The highest grade Electrical Sheets manufactured. It is superior to all other grades on the market, and by reason of its analysis and special treatment when rolling the hysteresis loss is extremely low. Its initial cost is more than offset by its economy of use. From actual tests of "Electrical Silicon-Alloy" Sheets, the energy losses are less than one-half of that found in the best commercial grade of Electrical Sheets heretofore obtainable. This improvement is noticeable, not only in the hysteresis loss, but in the eddy current loss as well. Both of these are very materially reduced. "Silicon-Alloy" Sheets are absolutely non-aging, and their permeability is greatly increased. They possess all of the following advantages:

- (1) Capacity of transformers is about 60 per cent greater, with greater efficiency.
- (2) Saving in cost of construction of electrical apparatus, by ability to use sheets of greater thickness for a given efficiency, thereby gaining:
 - (a) In cost per pound of sheets.
 - (b) In lessening number of blanks or punchings.
 - (c) In varnishing and assembling.
- (3) Saving in annealing of blanks to obtain uniformity.
- (4) Saving in cost of copper and labor winding per K. W.
- (5) Increased efficiency means economy of construction; economy of space required for installation; saving in weight; reduction in cost of transportation.

We are prepared to guarantee this material to show total iron losses at 60 cycles not exceeding the following:

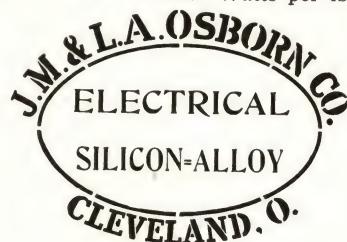
Induction per square centimeter.

Nos.....	30	29	28	27	26	
4000B.....	.220	.220	.227	.234	.242	Watts per lb.
6000B.....	.408	.408	.423	.439	.457	Watts per lb.

Its permeability at 4000B is guaranteed to be 3500, and at 6000B 3750.

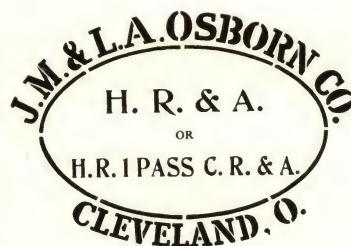
It will be observed that in the "Electrical High Speed" quality at an induction of 4000B per square centimeter, the total iron losses in gauges Nos. 30 and 29 are guaranteed not to exceed .400, whereas we are in position to guarantee the "Silicon-Alloy" Electrical Steel in a corresponding test to show total iron losses as low as .220.

If a guarantee will be desired on either material at other inductions we are prepared to furnish same, together with any further detailed information which might be required.

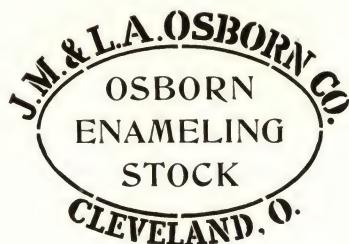




This is made in gauges Nos. 28 to 38, sheets 24 inches by 72 or 84 inches. Also supplied in smaller sizes, such as 20 x 40 inches, all material being shipped bundled or boxed as requested. For boxed stock see table, page 74.



Either of these finishes supplied in gauges Nos. 15 to 40, inclusive, and is used as a basis for figuring higher grades.



Much attention is given the manufacture of this. Enameling Stock is one of our great specialties and we are prepared to furnish same from ordinary base to special analysis, this depending upon one's requirements. A specialty is made by us of supplying a very high grade of this in a deep drawing quality suitable for tanks, enameled or granite ware; also stove panels, tops, pans, etc. Made in all gauges.



This is another one of our specialties, same being produced from any base and surface highly finished so as to give the best lithographic results. Made in all gauges, and always shipped boxed.



Another specialty which has largely taken the place of C. R. Strip Steel for all items that are to be nickel-plated, or copper-plated. When ordering specify how same is to be used. Made in all gauges and always shipped boxed.

OTHER SPECIALTIES

In addition to the products already described we are prepared to furnish the following finishes:

Black Taggers
Tea Tray Stock
Ferrotypic Stock
Bow Socket Steel
Bicycle Tubing
Powder Keg Stock

Black Plate for Tinning
Milk Can Stock
Music Disc Stock
Button Stock
Morton Polished
Alkali Drum Stock

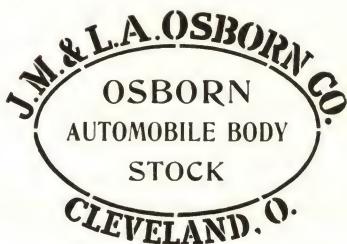
Also any special stock for which sheet steel can be used to advantage.



Made from either soft Bessemer or Open Hearth base; specially manufactured for sheet purposes requiring smooth surfaces and free from scale. Furnished in gauges Nos. 10 to 30.



Made from either soft Bessemer or Open Hearth base; full pickled, full cold rolled and re-annealed. Specially adapted to purposes requiring a clean, smooth sheet free from scale and pit marks.



The very highest grade product, made from either soft Bessemer or Open Hearth base; very highly finished and especially intended for automobile bodies, hoods, fenders, dashes, tool boxes, etc. Its surface is clean, smooth, free from scale and scale marks so as to give the best results for plating, painting or enameling.

We are prepared to furnish this in the "Regular Glossy" or "Special Velvet" finishes. The latter is generally used and particularly recommended for the reason that paint or enamel will adhere better to its velvety or dull surface; furthermore much labor and expense is saved on account of it not being necessary to apply as many priming or rubbing coats as required on glossy stock.



Made from either soft Bessemer or Open Hearth base; a very highly finished product, carefully prepared in every detail, each sheet being selected; especially adapted to the manufacture of metallic furniture and similar purposes. A clean, smooth sheet, free from scale and scale marks, beautiful satin finish.



This has been favorably known by the trade for generations and is a general favorite. On account of its uniform rich dark color and smooth, clean surface, it is an excellent product for stove pipe, elbows, etc. Supplied in gauges Nos. 14 to 28.



Made from either soft Bessemer or Open Hearth base, specially manufactured for sheet purposes; three pass (full cold rolled) and re-annealed. Furnished in gauges 10 to 30.

For standard sizes, gauges, weights of sheets and bundles, and number of sheets per bundle, Wood's Cleaned Refined, see table on page 80.



A smooth perfectly flat steel sheet, accurately sheared to specified sizes; specially adapted to the manufacture of stoves and ranges. Furnished in all gauges.



A product specially prepared for locomotive manufacturers, and railway companies' use for covering locomotives; also for jacketing cylinders of every kind.

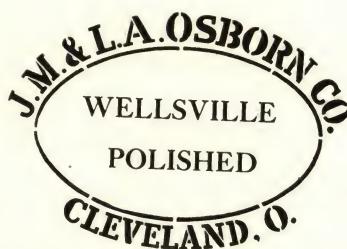


Sheets of beautiful dark blue color; highly polished and oiled. Specially adapted for high class stoves, ranges, stove pipe, etc. Furnished in gauges 14 to 30.



Same grade as one preceding excepting more attention given to rolling and finishing. Furnished in gauges Nos. 18 to 34. Maximum widths of 30 inches, and maximum lengths of 84 inches, but in no case over 14 square feet each sheet.

For standard sizes, gauges, weight of sheets and bundles, and number of sheets per bundle, see tables on pages 75 to 79.



A good, durable sheet of a dark blue color, highly polished surface, oiled. It has most excellent wearing qualities and is specially adapted for high class stoves, ranges, radiators, elbows, stove pipe, etc.



A semi-polished product of nice uniform dark velvet color. Furnished in gauges Nos. 14 to 30.

We can also furnish Cleveland Polished Special, which is the same grade as Cleveland Polished excepting more attention given to rolling and finishing. Furnished in gauges Nos. 18 to 34. Maximum widths of 30 inches, and maximum lengths of 84 inches, but in no case over 14 square feet each sheet.



This product is light blue finish and highly polished surface.



A better quality sheet than the one preceding. It is beautifully finished dark blue color and oiled. Used largely in the manufacture of high class stoves, ranges, etc.



A sheet of uniform blue color particularly adapted for stove pipe, ovens, roasters, stove bodies and other purposes for which a low priced blue stock is desired. Supplied in either Bessemer or Open Hearth base, and in gauges Nos. 14 to 30.



This is an excellent blue sheet of uniform color, smooth and clean surface. More attention is given to rolling and finishing than to the preceding grade. Especially adapted for stove pipe, ovens, roasters and other purposes for which a fair grade of blue stock is desired. Supplied in either Bessemer or Open Hearth base, and in gauges Nos. 18 to 34. Maximum widths of 30 inches, and maximum lengths of 84 inches, but in no case over 14 square feet each sheet.



A quality of uniform dark blue quality, smooth surface. Very desirable for stove bodies and other uses. Supplied in either Bessemer or Open Hearth base; gauges 14 to 30.



A quality of same grade as the one preceding, excepting more attention given to rolling and finishing. Supplied in either Bessemer or Open Hearth base, and in gauges Nos. 18 to 34. Maximum widths of 30 inches, and maximum lengths of 84 inches, but in no case over 14 square feet each sheet.



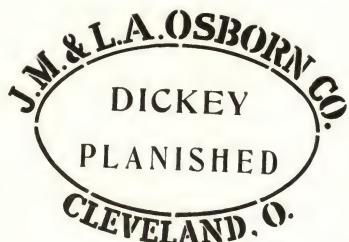
A sheet of uniform dark blue color. Supplied in either Bessemer or Open Hearth base, gauges Nos. 14 to 28.



The same as preceding grade, except surfaces are higher finished, being smooth and glossy; gauges Nos. 22 to 28.



A semi-polished product of a uniform dark color. Furnished in gauges Nos. 12 to 28.



This has the imported Russia iron finish, made from special analysis basic open hearth steel. Supplied in gauges 18 to 28, widths of 28 and 30 inches, lengths 60, 72 and 84 inches. All packed in metal cases.



A very excellent steel product with highly polished and hammered surface, especially produced to meet the demands for a quality closely resembling Russia or Planished stock, for less money. Furnished in gauges 14 to 28, packed in metal cases.

WOOD'S PATENT PLANISHED SHEET IRON



Put up in iron cases of about 250 pounds each.

These sheets are made from a genuine charcoal hammered bloom iron; they have a beautiful dark blue, mottled, glossy surface, which is practically impervious to oxidation. Uniform in color. Furnished in gauges 18 to 28; widths, 28 or 30 inches; lengths, 45, 48, 56, 60, 72 and 84 inches in the "A" grade; the "B" grade represents seconds accrued in the manufacture of "A" grade, and these are sold only to accumulation in gauges 24 to 28 and in one size only, 28 x 60 inches, with an occasional short sheet.

WOOD'S PLANISHED LOCOMOTIVE JACKET IRON

This is made by the same process as above, but is especially designed for locomotive jackets.

For standard sizes of sheets see table on page 81.

PLATES

Sheared and Universal Mill

FLOOR PLATES

Steel
Bars and Shapes
Hoops and Bands

Strip Steel
Box Bands

PLATES

SHEARED AND UNIVERSAL MILL

Made from Bessemer or Open Hearth

For Stacks, Tanks, Ship and Bridge Work

Extras to be Added to Base Price (Per Pound) of Plates

Rectangular Plates conforming to Manufacturers' Standard Specifications for Structural Steel dated February 6, 1903, or equivalent, $\frac{1}{4}$ -inch thick and over on thinnest edge, 100 inches wide and under, down to but not including 6 inches wide, are base. Plates up to 72 inches wide, inclusive, ordered 10.2 pounds per square foot are considered $\frac{1}{4}$ -inch plates. Plates over 72 inches wide must be ordered $\frac{3}{8}$ -inch thick on edge, or not less than 11 pounds per square foot to take base price. Plates over 72 inches wide ordered less than 11 pounds per square foot down to the weight of $\frac{3}{8}$ -inch take the price of $\frac{3}{8}$ -inch.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the Standard Specifications of the Association of American Steel Manufacturers.

Gauges under $\frac{1}{4}$ -inch to and including $\frac{3}{8}$ -inch on thinnest edge.....	\$0.10
Gauges under $\frac{3}{8}$ -inch to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
Gauges under No. 9 to and including No. 10.....	.30
Gauges under No. 10 to and including No. 12.....	.40
Sketches (including all straight taper plates), 3 feet and over in length.....	.10
Complete circles, 3 feet diameter and over.....	.20
Boiler and flange steel.....	.10
"A. B. M. A." and ordinary firebox steel.....	.20
Stillbottom steel .....	.30
Marine Steel .....	.40
Locomotive firebox steel .....	.50
Widths over 100 inches up to 110 inches, inclusive.....	.05
Widths over 110 inches up to 115 inches, inclusive.....	.10
Widths over 115 inches up to 120 inches, inclusive.....	.15
Widths over 120 inches up to 125 inches, inclusive.....	.25
Widths over 125 inches up to 130 inches, inclusive.....	.50
Widths over 130 inches	1.00
Cutting to lengths or diameters under 3 feet to 2 feet, inclusive.....	.25
Cutting to lengths or diameters under 2 feet to 1 foot, inclusive.....	.50
Cutting to lengths or diameters under 1 foot.....	1.55

No charge for cutting rectangular plates to lengths, 3 feet and over.

PLATES

VARIATIONS IN THE WEIGHT OF SHEARED PLATES

As Adopted by The Association of American Steel Manufacturers on August 9, 1895.
Revised Feb. 17, 1896, Oct. 23, 1896, April 19, 1902, and Feb. 6, 1903.

Variation When Ordered to Weight

The variation in cross-section or weight of more than $2\frac{1}{2}$ per cent from that specified will be sufficient cause for rejection, except in the case of sheared plates, which will be covered by the following permissible variations:

a. Plates $12\frac{1}{2}$ pounds per square foot or heavier, up to 100 inches wide, when ordered to weight, shall not average more than $2\frac{1}{2}$ per cent variation above or $2\frac{1}{2}$ per cent below the theoretical weight. When 100 inches wide and over, 5 per cent above or 5 per cent below the theoretical weight.

b. Plates under $12\frac{1}{2}$ pounds per square foot, when ordered to weight, shall not average a greater variation than the following:

Up to 75 inches wide, $2\frac{1}{2}$ per cent above or $2\frac{1}{2}$ per cent below the theoretical weight. 75 inches wide up to 100 inches wide, 5 per cent above or 3 per cent below the theoretical weight. When 100 inches wide and over, 10 per cent above or 3 per cent below the theoretical weight.

c. For all plates ordered to gauge there will be permitted an average excess of weight over that corresponding to the dimensions on the order equal in amount to that specified in the following table:

Table of Allowances for Overweight for Rectangular Plates When Ordered to Gauge

Plates will be considered up to gauge if measuring not over $1/100$ -inch less than the ordered gauge.

The weight of 1 cubic inch of rolled steel is assumed to be 0.2833 pound.

Plates $\frac{1}{4}$ -Inch and Over in Thickness.

Thickness of Plate Inch	Width of Plate			
	Up to 75 In. Per Cent	75 In. to 100 In. Per Cent	Over 100 to 115 In. Per Cent	Over 115 In. Per Cent
$\frac{1}{4}$	10	14	18	..
$\frac{5}{16}$	8	12	16	..
$\frac{3}{8}$	7	10	13	17
$\frac{7}{16}$	6	8	10	13
$\frac{1}{2}$	5	7	9	12
$\frac{9}{16}$	$4\frac{1}{2}$	$6\frac{1}{2}$	$8\frac{1}{2}$	11
$\frac{5}{8}$	4	6	8	10
Over $\frac{5}{8}$	$3\frac{1}{2}$	5	$6\frac{1}{2}$	9

Plates Under $\frac{1}{4}$ -Inch in Thickness.

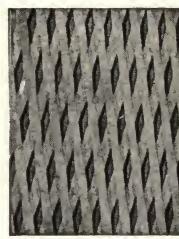
Thickness of Plate Inch	Width of Plate		
	Up to 50 In. Per Cent	50 In. to 70 In. Per Cent	Over 70 In. Per Cent
$\frac{1}{8}$ up to $\frac{5}{16}$	10	15	20
$\frac{3}{16}$ up to $\frac{3}{8}$	$8\frac{1}{2}$	$12\frac{1}{2}$	17
$\frac{3}{16}$ up to $\frac{1}{4}$	7	10	15

OSBORN WROUGHT STEEL FLOOR PLATES

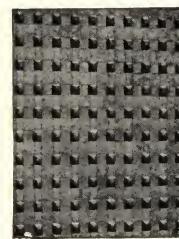
PATTERNS AND SIZES



Ribbed Pattern



Diamond Pattern



Checkered Pattern

We can furnish the following Maximum sizes.

Width, inches	24	36	44	50	56	60
$\frac{1}{8}$ in. thick	120	120	120	130	130	130
$\frac{3}{16}$ in. thick	160	150	130	130	130	120
$\frac{1}{4}$ in. thick	170	160	160	160	160	120
$\frac{5}{16}$ in. thick	190	190	180	180	170	120
$\frac{3}{8}$ in. thick	190	190	180	180	170	120
$\frac{7}{16}$ in. thick	190	190	180	180	170	100
$\frac{1}{2}$ in. thick	190	180	180	170	150	96
$\frac{3}{4}$ in. thick	170	160	160	140	130	96

We manufacture all gauges from $\frac{1}{8}$ in. to $\frac{3}{4}$ in. in thickness and can furnish any size and shape within above maximum sizes.

Weights Per Square Foot

$\frac{1}{8}$ in.	8 lbs.	$\frac{7}{16}$ in.	19 lbs.
$\frac{3}{16}$ in.	$8\frac{3}{4}$ lbs.	$\frac{1}{2}$ in.	$21\frac{1}{2}$ lbs.
$\frac{1}{4}$ in.	$11\frac{1}{4}$ lbs.	$\frac{5}{8}$ in.	$26\frac{1}{2}$ lbs.
$\frac{5}{16}$ in.	$13\frac{3}{4}$ lbs.	$\frac{3}{4}$ in.	32 lbs.
$\frac{3}{8}$ in.	$16\frac{1}{4}$ lbs.	$\frac{7}{8}$ in.	37 lbs.

We can furnish the following Maximum sizes.

Width, inches	24	36	42	48	56	60	72
$\frac{1}{8}$ in. thick	120	120	120	130	130	130	120
$\frac{3}{16}$ in. thick	140	130	130	130	130	130	120
$\frac{1}{4}$ in. thick	170	160	160	160	160	160	120
$\frac{5}{16}$ in. thick	190	190	180	180	180	160	120
$\frac{3}{8}$ in. thick	190	190	190	180	180	170	120
$\frac{7}{16}$ in. thick	190	190	190	180	180	170	100
$\frac{1}{2}$ in. thick	190	190	180	180	180	150	100
$\frac{3}{4}$ in. thick	170	170	160	150	150	144	96

We manufacture all gauges from $\frac{1}{8}$ in. to $\frac{3}{4}$ in. in thickness and can furnish any size and shape within above maximum sizes.

Weights Per Square Foot

$\frac{1}{8}$ in.	9 lbs.	$\frac{7}{16}$ in.	20 lbs.
$\frac{3}{16}$ in.	$9\frac{3}{4}$ lbs.	$\frac{1}{2}$ in.	$22\frac{1}{2}$ lbs.
$\frac{1}{4}$ in.	$12\frac{1}{4}$ lbs.	$\frac{5}{8}$ in.	$27\frac{1}{2}$ lbs.
$\frac{5}{16}$ in.	$14\frac{3}{4}$ lbs.	$\frac{3}{4}$ in.	33 lbs.
$\frac{3}{8}$ in.	$17\frac{1}{4}$ lbs.	$\frac{7}{8}$ in.	38 lbs.

The maximum size we can furnish in the checkered pattern is 48 inches wide by 48 inches long by $\frac{3}{16}$ inch thick, and heavier. On account of the extra cost of manufacture, we are compelled to charge a slight advance for Checkered Patterns over the base price for Ribbed and Diamond Patterns.

Unless specially stated our quotations never cover Checkered Patterns.

Weights Per Square Foot

$\frac{3}{16}$ in.	$8\frac{3}{4}$ lbs.	$\frac{5}{8}$ in.	$13\frac{3}{4}$ lbs.	$\frac{7}{16}$ in.	19 lbs.	$\frac{5}{8}$ in.	$26\frac{1}{2}$ lbs.
$\frac{1}{4}$ in.	$11\frac{1}{4}$ lbs.	$\frac{3}{8}$ in.	$16\frac{1}{4}$ lbs.	$\frac{1}{2}$ in.	$21\frac{1}{2}$ lbs.	$\frac{3}{4}$ in.	32 lbs.

We are prepared to furnish all gauges from $\frac{3}{16}$ inch to 1 inch thick.

These weights are approximate and may vary according to the size of the plate. Thickness in all cases is measured through the body of the plate.

We can cut to any size and shape that can be worked on special mill shears.

OSBORN WROUGHT STEEL FLOOR PLATES

MADE FROM THE FINEST GRADE OF OPEN HEARTH BOILER STEEL

Stronger and Cheaper than Cast Iron

They are more accurately sheared and have a better finished surface than any other make of steel floor plates on the market; rolled perfectly flat and straight, which insures economy in your work. Used for floors and stairways in buildings, engine and boiler rooms, breweries, bridges, factories, fire escapes, power plants, cellar doors, war and merchant vessels, and for all inside and outside work where a handsome appearance is desired in connection with a roughened surface to prevent accidents from slipping, to resist wear, and to insure a safe and light construction at the lowest possible cost.

SAFE LOADS

“Osborn” Plates vs. Cast Iron

For the purpose of comparison whereby it may be readily seen what thickness of “Osborn” Plates to use in place of Cast Iron, the following table has been carefully prepared by a prominent structural engineer. This table is based on fibre strains as required by strict building laws and provides a factor of safety of four.

A glance will show the vast superiority of “Osborn” Plates over Cast Iron and will more than substantiate our claims.

“Osborn” Floor Plate

Thickness in Inches.

Span in Feet	1-8	3-16	1-4	5-16	3-8	7-16	1-2	5-8
2	80	182	379	516	748	1021	1345	2100
3	33	77	140	222	318	444	582	918
4	16	40	75	119	176	242	318	596
5	9	22	44	72	107	148	197	315
6		13	28	46	70	97	131	211
7		8	18	30	47	67	91	148
8			11	20	33	47	65	108
9			7	13	22	33	47	80
10				8	16	24	35	60

Cast Iron Plate

Thickness in Inches.

Span in Feet	1-8	3-16	1-4	5-16	3-8	7-16	1-2	5-8
2	15	36	79	110	160	221	294	485
3	4	12	25	41	63	88	118	202
4		3	10	17	59	42	58	103
5			2	7	13	20	30	60
6				2	5	8	15	32
7						2	6	17
8								7
9								
10								

“Osborn” Plates will not break.

STANDARD CLASSIFICATION OF EXTRAS ON STEEL BARS AND SHAPES

September 1, 1909

Extras are Given in Cents Per Pound

Rounds and Squares

$\frac{3}{4}$ to 3 $\frac{1}{8}$ in.	Base
$\frac{5}{8}$ to $\frac{11}{16}$ in.	.05 extra
$\frac{1}{2}$ to $\frac{15}{16}$ in.	.10 extra
$\frac{1}{8}$ in.	.20 extra
$\frac{3}{8}$ in.	.25 extra
$\frac{11}{16}$ in.	.30 extra
$\frac{5}{8}$ in.	.35 extra
$\frac{3}{2}$ in.	.40 extra
$\frac{7}{8}$ in.	.50 extra
$\frac{6}{8}$ in.	.75 extra
$\frac{3}{2}$ in.	1.00 extra
$\frac{7}{8}$ in.	1.25 extra
$\frac{3}{8}$ to $\frac{3}{5}$ in.	.075 extra
$\frac{5}{8}$ to $\frac{4}{5}$ in.	.125 extra
$\frac{11}{16}$ to $\frac{4}{5}$ in.	.15 extra
$\frac{5}{8}$ to $\frac{5}{6}$ in.	.20 extra
$\frac{3}{8}$ to $\frac{5}{12}$ in.	.25 extra
$\frac{5}{8}$ to $\frac{6}{5}$ in.	.375 extra
$\frac{6}{8}$ to $\frac{6}{5}$ in.	.50 extra
$\frac{6}{8}$ to $\frac{7}{4}$ in.	.625 extra

For intermediate sizes, the next higher extra to be charged in all cases.

Light Bars and Bands

$\frac{1}{2}$ to 6 in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.20 extra
$\frac{1}{2}$ to 6 in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	.30 extra
1 to $\frac{7}{8}$ in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.25 extra
1 to $\frac{7}{8}$ in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	.35 extra
$\frac{11}{16}$ to $\frac{8}{7}$ in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.35 extra
$\frac{11}{16}$ to $\frac{8}{7}$ in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	.40 extra
$\frac{11}{16}$ to $\frac{9}{8}$ in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.50 extra
$\frac{9}{8}$ to $\frac{9}{8}$ in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.60 extra
$\frac{9}{8}$ to $\frac{9}{8}$ in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	.60 extra
$\frac{11}{16}$ in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.65 extra
$\frac{1}{2}$ in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.65 extra
$\frac{1}{2}$ in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	.75 extra
$\frac{11}{16}$ in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.90 extra
$\frac{11}{16}$ in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	1.05 extra
$\frac{3}{8}$ in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.95 extra
$\frac{3}{8}$ in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	1.20 extra

For intermediate sizes, the next higher extra to be charged in all cases.

Flat Bars and Heavy Bands

1 to 6 in. x $\frac{3}{8}$ to 1 in.	Base
1 to 6 in. x $\frac{1}{4}$ to $\frac{1}{8}$ in.	.10 extra
$\frac{11}{16}$ to $\frac{15}{16}$ in. x $\frac{1}{4}$ to $\frac{1}{8}$ in.	.20 extra
$\frac{11}{16}$ to $\frac{18}{17}$ in. x $\frac{1}{4}$ to $\frac{1}{8}$ in.	.25 extra
$\frac{11}{16}$ to $\frac{9}{8}$ in. x $\frac{1}{4}$ to $\frac{1}{2}$ in.	.25 extra
$\frac{11}{16}$ to $\frac{9}{8}$ in. x $\frac{1}{4}$ to $\frac{1}{8}$ in.	.35 extra
$\frac{1}{2}$ in. x $\frac{3}{8}$ to $\frac{1}{8}$ in.	.50 extra
$\frac{1}{2}$ in. x $\frac{1}{4}$ to $\frac{1}{8}$ in.	.60 extra
$\frac{1}{2}$ in. x $\frac{3}{8}$ in.	.70 extra
$\frac{1}{2}$ in. x $\frac{1}{4}$ to $\frac{1}{8}$ in.	.80 extra
$\frac{11}{16}$ in. x $\frac{7}{8}$ to $\frac{1}{8}$ in.	1.00 extra
$\frac{11}{16}$ to 6 in. x $\frac{1}{4}$ to $\frac{1}{2}$ in.	.05 extra
$\frac{11}{16}$ to 6 in. x $\frac{1}{4}$ to $\frac{1}{2}$ in.	.10 extra
$\frac{11}{16}$ to 6 in. x $\frac{1}{8}$ to $\frac{23}{24}$ in.	.15 extra
$\frac{3}{8}$ to 6 in. x $\frac{3}{8}$ to 4 in.	.20 extra

For intermediate sizes, the next higher extra to be charged in all cases.

Hexagons

$\frac{3}{4}$ to $2\frac{1}{2}$ in.	.15 extra
$\frac{5}{8}$ to $\frac{11}{16}$ in.	.25 extra
$\frac{1}{2}$ to $\frac{7}{8}$ in.	.35 extra
$\frac{7}{16}$ in.	.55 extra
$\frac{3}{8}$ in.	.65 extra
$\frac{5}{16}$ in.	.75 extra

For intermediate sizes, the next higher extra to be charged in all cases.

Ovals

$\frac{3}{4}$ to $1\frac{3}{4}$ in.	.15 extra
$\frac{5}{8}$ to $\frac{11}{16}$ in.	.25 extra
$\frac{1}{2}$ in.	.30 extra
$\frac{7}{16}$ in.	.40 extra
$\frac{3}{8}$ in.	.50 extra
$\frac{5}{16}$ in.	.60 extra

For intermediate sizes, the next higher extra to be charged in all cases.

Half Ovals and Half Rounds

$\frac{7}{8}$ to 4 in. x $\frac{7}{8}$ in. and thicker	.25 extra
$\frac{7}{8}$ to 4 in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in.	.35 extra
$\frac{7}{8}$ to 4 in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	.50 extra
$\frac{1}{8}$ in. x Nos. 7, 8, 9 and $\frac{3}{8}$ in. and thicker	.40 extra
$\frac{1}{8}$ in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	.60 extra
$\frac{1}{8}$ in. x Nos. 13, 14 and 15.	.70 extra
$\frac{1}{8}$ in. x Nos. 13, 14 and 15. and thicker	.50 extra
$\frac{1}{8}$ in. x Nos. 10, 11, 12 and $\frac{3}{8}$ in.	.65 extra
$\frac{1}{8}$ in. to $\frac{11}{16}$ in. x Nos. 13, 14 and 15.	.73 extra
$\frac{1}{8}$ in. to $\frac{11}{16}$ in. x $\frac{7}{8}$ in. and thicker	.65 extra
$\frac{1}{8}$ in. to $\frac{11}{16}$ in. x Nos. 13, 14 and 15.	.90 extra
$\frac{1}{8}$ in. x $\frac{3}{8}$ in. and thicker	1.05 extra
$\frac{1}{8}$ in. x Nos. 13, 14 and 15.	1.15 extra
$\frac{1}{8}$ in. x $\frac{3}{8}$ in. and thicker	1.25 extra
$\frac{3}{8}$ in. x Nos. 14 and 15.	1.35 extra
$\frac{5}{16}$ in. x $\frac{5}{8}$ in. and thicker	1.30 extra
$\frac{5}{16}$ in. x less than $\frac{5}{8}$ in. thick	1.40 extra

For intermediate sizes, the next higher extra to be charged in all cases.

Channels

$\frac{1}{2}$ in. and wider, but under 3 in., x $\frac{3}{8}$ in. and heavier	.10 extra
$\frac{1}{2}$ in. and wider, but under 3 in., x $\frac{1}{8}$ in.	.15 extra
1 to $1\frac{1}{4}$ in. x $\frac{7}{8}$ in. and heavier	.15 extra
1 to $1\frac{1}{4}$ in. x $\frac{1}{8}$ in. and heavier	.20 extra
$\frac{7}{8}$ x $\frac{1}{8}$ in.	.25 extra
$\frac{5}{8}$ to $\frac{3}{4}$ in. x $\frac{3}{8}$ in.	.25 extra
$\frac{3}{4}$ x $\frac{1}{8}$ in.	.30 extra
$\frac{7}{8}$ x $\frac{1}{8}$ in.	.30 extra
$\frac{7}{8}$ x $\frac{1}{8}$ in.	.35 extra
$\frac{5}{8}$ x $\frac{1}{8}$ in.	.40 extra

For intermediate sizes, the next higher extra to be charged in all cases.

See Tables of Weights, pages 82 to 85.

STANDARD CLASSIFICATION OF EXTRAS ON STEEL BARS AND SHAPES

September 1, 1909

ANGLES

$1\frac{1}{2} \times 1\frac{1}{2}$ inches and wider, but under 3 in. x $\frac{3}{16}$ in. and heavier.....	\$0.10 extra
$1\frac{1}{2} \times 1\frac{1}{2}$ inches and wider, but under 3 in. x $\frac{1}{8}$ inch.....	.15 extra
1 x 1 to $1\frac{1}{4} \times 1\frac{1}{4}$ inches, x $\frac{3}{16}$ inch and heavier.....	.15 extra
1 x 1 to $1\frac{1}{4} \times 1\frac{1}{4}$ inches, x $\frac{1}{8}$ inch.....	.20 extra
$\frac{7}{8} \times \frac{7}{8}$ inch x $\frac{3}{16}$ inch.....	.20 extra
$\frac{7}{8} \times \frac{7}{8}$ inch x $\frac{1}{8}$ inch.....	.25 extra
$\frac{3}{4} \times \frac{3}{4}$ inch x $\frac{3}{16}$ inch.....	.25 extra
$\frac{3}{4} \times \frac{3}{4}$ inch x $\frac{1}{8}$ inch.....	.30 extra
$\frac{5}{8} \times \frac{5}{8}$ inch x $\frac{1}{8}$ inch.....	1.10 extra
$\frac{5}{8} \times \frac{5}{8}$ inch x $\frac{3}{32}$ inch.....	1.30 extra
$\frac{1}{2} \times \frac{1}{2}$ inch x $\frac{1}{8}$ inch.....	1.60 extra
$\frac{1}{2} \times \frac{1}{2}$ inch x less than $\frac{1}{8}$ inch.....	1.80 extra
3 inches on one or both legs by less than $\frac{1}{4}$ inch thick.....	.35 extra

Unequal leg angles are subject to special prices, which will be furnished on application.

For intermediate sizes, the next higher extra to be charged in all cases.

TEES

$1\frac{1}{2} \times 1\frac{1}{2}$ inches and wider, but under 3 in. x $\frac{1}{4}$ inch and heavier.....	\$0.10 extra
$1\frac{1}{2} \times 1\frac{1}{2}$ inches and wider, but under 3 in. x $\frac{3}{16}$ inch.....	.20 extra
$1\frac{1}{2} \times 1\frac{1}{2}$ inches x $\frac{1}{8}$ inch .....	.25 extra
$1\frac{1}{4} \times 1\frac{1}{4}$ inches x $\frac{1}{4}$ inch and heavier.....	.20 extra
$1\frac{1}{4} \times 1\frac{1}{4}$ inches x $\frac{3}{16}$ inch.....	.25 extra
$1\frac{1}{4} \times 1\frac{1}{4}$ inches x $\frac{1}{8}$ inch.....	.30 extra
1 x 1 to $1\frac{1}{8} \times 1\frac{1}{8}$ inches, x $\frac{3}{16}$ inch thick.....	.30 extra
1 x 1 to $1\frac{1}{8} \times 1\frac{1}{8}$ inches, x $\frac{1}{8}$ inch thick.....	.35 extra
$\frac{7}{8} \times \frac{7}{8}$ inch x $\frac{1}{8}$ inch and thicker.....	.45 extra
$\frac{3}{4} \times \frac{3}{4}$ inch x $\frac{1}{8}$ inch and thicker.....	.55 extra
$\frac{5}{8} \times \frac{5}{8}$ inch x $\frac{1}{8}$ inch and thicker.....	1.10 extra

Unequal leg tees are subject to special prices, which will be furnished on application.

For intermediate sizes, the next higher extra to be charged in all cases.

QUANTITY DIFFERENTIALS

All specifications for less than 2000 lbs. of a size will be subject to the following extras, the total weight of a size ordered to determine the extra, regardless of length and regardless of exact quantity actually shipped.

Quantities less than 2000 lbs., but not less than 1000 lbs.....	\$0.15 extra
Quantities less than 1000 lbs.....	.35 extra

EXTRAS FOR CUTTING TO SPECIFIED LENGTHS

Hot Sawing or Shearing to lengths over 24 inches.....	\$0.05
Hot Sawing or Shearing to lengths 12 inches to 24 inches, inclusive.....	.10
Hot Sawing or Shearing to lengths under 12 inches.....	.15
Machine Cutting to lengths over 24 inches.....	.10
Machine Cutting to lengths 12 inches to 24 inches, inclusive.....	.20
For Machine Cutting to lengths less than 12 inches, extra will be furnished on application, but will not be less than.....	.30

EXCEPTIONS

No charge will be made for Hot Sawing or Shearing to lengths of 5 feet and over.

STRAIGHTENING AND CENTERING

Machine Straightening .....	.10
Extra for Machine Straightening and Centering will be furnished on application.	

STEEL HOOPS



IN SCROLLS.



IN COILS.

STANDARD CLASSIFICATION OF EXTRAS ON STEEL HOOPS

April 2, 1909

Throughout this list Birmingham Wire Gauge and the corresponding decimal equivalents are used. Extras are given in cents per pound.

Width	Gauge	Decimal Equivalents	Extra for Size	Width	Gauge	Decimal Equivalents	Extra for Size	Width	Gauge	Decimal Equivalents	Extra for Size
1 $\frac{7}{16}$ to 3 in.	13	.095	.10	$\frac{7}{8}$ in.	21	.032	.45	$\frac{7}{16}$ in.	13	.095	.55
1 $\frac{7}{16}$ to 3 in.	14	.083	.10	$\frac{7}{8}$ in.	22	.028	.55	$\frac{9}{16}$ in.	14	.083	.55
1 $\frac{7}{16}$ to 3 in.	15	.072	.10	$\frac{7}{8}$ in.	23	.025	.65	$\frac{1}{2}$ in.	15	.072	.55
1 $\frac{7}{16}$ to 3 in.	16	.065	.10	$\frac{7}{8}$ in.	24	.022	.75	$\frac{9}{16}$ in.	16	.065	.60
1 $\frac{7}{16}$ to 2 in.	17	.058	.15	$\frac{3}{4}$ and $\frac{13}{16}$ in.	13	.095	.40	$\frac{1}{2}$ in.	17	.058	.60
1 $\frac{7}{16}$ to 2 in.	18	.049	.15	$\frac{3}{4}$ and $\frac{13}{16}$ in.	14	.083	.40	$\frac{1}{2}$ in.	18	.049	.60
1 $\frac{7}{16}$ to 2 in.	19	.042	.15	$\frac{3}{4}$ and $\frac{13}{16}$ in.	15	.072	.40	$\frac{9}{16}$ in.	19	.042	.70
1 $\frac{7}{16}$ to 2 in.	20	.035	.20	$\frac{3}{4}$ and $\frac{13}{16}$ in.	16	.065	.45	$\frac{1}{2}$ in.	20	.035	.70
1 $\frac{7}{16}$ to 2 in.	21	.032	.25	$\frac{3}{4}$ and $\frac{13}{16}$ in.	17	.058	.45	$\frac{9}{16}$ in.	21	.032	.80
1 $\frac{7}{16}$ to 2 in.	22	.028	.35	$\frac{3}{4}$ and $\frac{13}{16}$ in.	18	.049	.45	$\frac{1}{2}$ in.	22	.028	.90
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	13	.095	.15	$\frac{3}{4}$ and $\frac{13}{16}$ in.	19	.042	.50	$\frac{9}{16}$ in.	23	.025	1.00
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	14	.083	.15	$\frac{3}{4}$ and $\frac{13}{16}$ in.	20	.035	.50	$\frac{1}{2}$ in.	13	.095	.65
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	15	.072	.15	$\frac{3}{4}$ and $\frac{13}{16}$ in.	21	.032	.55	$\frac{1}{2}$ in.	14	.083	.65
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	16	.065	.20	$\frac{3}{4}$ and $\frac{13}{16}$ in.	22	.028	.60	$\frac{1}{2}$ in.	15	.072	.65
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	17	.058	.20	$\frac{3}{4}$ and $\frac{13}{16}$ in.	23	.025	.70	$\frac{1}{2}$ in.	16	.065	.70
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	18	.049	.20	$\frac{3}{4}$ and $\frac{13}{16}$ in.	24	.022	.80	$\frac{1}{2}$ in.	17	.058	.70
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	19	.042	.25	$\frac{13}{16}$ in.	13	.095	.45	$\frac{1}{2}$ in.	18	.049	.70
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	20	.035	.25	$\frac{13}{16}$ in.	14	.083	.45	$\frac{1}{2}$ in.	19	.042	.80
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	21	.032	.30	$\frac{13}{16}$ in.	15	.072	.45	$\frac{1}{2}$ in.	20	.035	.80
1 $\frac{1}{2}$ to 1 $\frac{3}{8}$ in.	22	.028	.40	$\frac{13}{16}$ in.	16	.065	.50	$\frac{1}{2}$ in.	21	.032	.90
$\frac{13}{16}$ and 1 in.	13	.095	.20	$\frac{13}{16}$ in.	17	.058	.50	$\frac{1}{2}$ in.	22	.028	1.00
$\frac{13}{16}$ and 1 in.	14	.083	.20	$\frac{13}{16}$ in.	18	.049	.50	$\frac{1}{2}$ in.	23	.025	1.10
$\frac{13}{16}$ and 1 in.	15	.072	.20	$\frac{13}{16}$ in.	19	.042	.60	$\frac{7}{16}$ in.	13	.095	.90
$\frac{13}{16}$ and 1 in.	16	.065	.25	$\frac{13}{16}$ in.	20	.035	.60	$\frac{7}{16}$ in.	14	.083	.90
$\frac{13}{16}$ and 1 in.	17	.058	.25	$\frac{13}{16}$ in.	21	.032	.70	$\frac{7}{16}$ in.	15	.072	.90
$\frac{13}{16}$ and 1 in.	18	.049	.25	$\frac{13}{16}$ in.	22	.028	.80	$\frac{7}{16}$ in.	16	.065	1.00
$\frac{13}{16}$ and 1 in.	19	.042	.30	$\frac{13}{16}$ in.	23	.025	.90	$\frac{7}{16}$ in.	17	.058	1.00
$\frac{13}{16}$ and 1 in.	20	.035	.30	$\frac{13}{16}$ in.	24	.022	1.00	$\frac{7}{16}$ in.	18	.049	1.00
$\frac{13}{16}$ and 1 in.	21	.032	.35	$\frac{5}{8}$ in.	13	.095	.50	$\frac{7}{16}$ in.	19	.042	1.10
$\frac{13}{16}$ and 1 in.	22	.028	.45	$\frac{5}{8}$ in.	14	.083	.50	$\frac{7}{16}$ in.	20	.035	1.10
$\frac{13}{16}$ and 1 in.	23	.025	.55	$\frac{5}{8}$ in.	15	.072	.50	$\frac{7}{16}$ in.	21	.032	1.20
$\frac{13}{16}$ and 1 in.	24	.022	.65	$\frac{5}{8}$ in.	16	.065	.55	$\frac{5}{8}$ in.	13	.095	1.10
$\frac{7}{8}$ in.	13	.095	.30	$\frac{5}{8}$ in.	17	.058	.55	$\frac{5}{8}$ in.	14	.083	1.10
$\frac{7}{8}$ in.	14	.083	.30	$\frac{5}{8}$ in.	18	.049	.55	$\frac{5}{8}$ in.	15	.072	1.10
$\frac{7}{8}$ in.	15	.072	.30	$\frac{5}{8}$ in.	19	.042	.65	$\frac{5}{8}$ in.	16	.065	1.20
$\frac{7}{8}$ in.	16	.065	.35	$\frac{5}{8}$ in.	20	.035	.65	$\frac{5}{8}$ in.	17	.058	1.20
$\frac{7}{8}$ in.	17	.058	.35	$\frac{5}{8}$ in.	21	.032	.75	$\frac{5}{8}$ in.	18	.049	1.20
$\frac{7}{8}$ in.	18	.049	.35	$\frac{5}{8}$ in.	22	.028	.85	$\frac{5}{8}$ in.	19	.042	1.30
$\frac{7}{8}$ in.	19	.042	.40	$\frac{5}{8}$ in.	23	.025	.95	$\frac{5}{8}$ in.	20	.035	1.30
$\frac{7}{8}$ in.	20	.035	.40	$\frac{5}{8}$ in.	24	.022	1.05				

For Tables of Weights, see page 86.

STANDARD CLASSIFICATION OF EXTRAS ON STEEL HOOPS

APRIL 2, 1909

Throughout this list Birmingham Wire Gauge and the corresponding decimal equivalents are used. Extras are given in cents per pound.

EXTRA WIDE HOOPS AND BANDS

Width	Gauge	Decimal Equivalents	Extra for Size	Width	Gauge	Decimal Equivalents	Extra for Size
2 $\frac{1}{8}$ to 3 in.	17	.058	.20c	4 $\frac{1}{8}$ to 5 in.	13	.095	.15c
2 $\frac{1}{8}$ to 3 in.	18	.049	.25	4 $\frac{1}{8}$ to 5 in.	14	.083	.20
2 $\frac{1}{8}$ to 3 in.	19	.042	.30	4 $\frac{1}{8}$ to 5 in.	15	.072	.30
2 $\frac{1}{8}$ to 3 in.	20	.035	.35	4 $\frac{1}{8}$ to 5 in.	16	.065	.40
3 $\frac{1}{8}$ to 4 in.	13	.095	.10	5 $\frac{1}{4}$ to 7 in.	13	.095	.20
3 $\frac{1}{8}$ to 4 in.	14	.083	.15	5 $\frac{1}{4}$ to 7 in.	14	.083	.25
3 $\frac{1}{8}$ to 4 in.	15	.072	.20	5 $\frac{1}{4}$ to 6 in.	15	.072	.35
3 $\frac{1}{8}$ to 4 in.	16	.065	.25	5 $\frac{1}{4}$ to 6 in.	16	.065	.45
3 $\frac{1}{8}$ to 4 in.	17	.058	.35	7 $\frac{1}{2}$ to 8 in.	13	.095	.25
3 $\frac{1}{8}$ to 4 in.	18	.049	.50	7 $\frac{1}{2}$ to 8 in.	14	.083	.35

Additional Extras

For cutting to specified lengths not less than 24 in..... .05c per lb.
 For cutting to specified lengths 12 in. to 24 in..... .20c per lb.

Extra for cutting to specified lengths less than 12 in. will be furnished on application.

For rounding one end of cut hoop..... .05c per lb.
 For rounding both ends of cut hoop..... .10c per lb.
 For each gauge lighter than included on list..... .10c per lb.

For intermediate gauges the extra for the next lighter gauge will be charged.
 Extras for flaring, galvanizing and pickling will be quoted on application.
 Extras for packing in barrels, casks and boxes will be quoted on application.

Exemption

Extras for cutting and rounding one end will be waived on all widths when ordered in car load lots for cooperage purposes.

For Tables of Weights, see Page 86.

COLD ROLLED STRIP STEEL

**Straight or Coiled, Round or Square Edge
Uniform Quality, Accurate Rolling and Finest Finish for
Blanking, Stamping and Drawing Purposes**

Especially adapted for the manufacture of Range Bands, Springs, Ferrules, Hardware Specialties, Hinges, Bicycle and Automobile Parts, etc. All material has a bright, perfectly smooth finish, and supplied in any degree of hardness.

On account of there being so many grades of this material, varying in stiffness, softness, hardness and quality, it will be necessary for the trade to inform us for what purpose and how the steel is to be used.

When convenient, send us a sample of the article you wish to make, as this will aid us in judging the quality best suited for requirements.

GAUGE EQUIVALENTS IN DECIMAL PARTS OF AN INCH

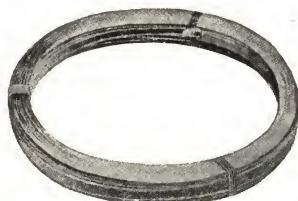
Number	Birm. or Stubs	Brown & Sharpe	U. S. Standard	Fractions of an Inch
0000	.454	.460	.4062	$\frac{1}{4}$ — .016
000	.425	.410	.3750	$\frac{3}{8}$ — .031
00	.380	.365	.3437	$\frac{9}{16}$ — .047
0	.340	.325	.3125	$\frac{1}{8}$ — .062
1	.300	.289	.2812	$\frac{3}{16}$ — .078
2	.284	.258	.2656	$\frac{3}{32}$ — .094
3	.259	.229	.2500	$\frac{7}{64}$ — .109
4	.238	.204	.2344	$\frac{1}{8}$ — .125
5	.220	.182	.2187	$\frac{9}{64}$ — .140
6	.203	.162	.2031	$\frac{5}{32}$ — .156
7	.180	.144	.1875	$\frac{11}{64}$ — .172
8	.165	.128	.1719	$\frac{1}{16}$ — .187
9	.148	.114	.1562	$\frac{13}{64}$ — .203
10	.134	.102	.1406	$\frac{7}{32}$ — .219
11	.120	.091	.1250	$\frac{15}{64}$ — .234
12	.109	.081	.1094	$\frac{1}{4}$ — .250
13	.095	.072	.0937	$\frac{9}{32}$ — .281
14	.083	.064	.0781	$\frac{1}{16}$ — .312
15	.072	.057	.0703	$\frac{11}{32}$ — .344
16	.065	.051	.0625	$\frac{3}{8}$ — .375
17	.058	.045	.0562	$\frac{3}{32}$ — .406
18	.049	.040	.0500	$\frac{1}{8}$ — .437
19	.042	.036	.0437	$\frac{15}{32}$ — .469
20	.035	.032	.0375	$\frac{1}{2}$ — .500
21	.032	.028	.0344	$\frac{7}{32}$ — .531
22	.028	.025	.0312	$\frac{9}{64}$ — .562
23	.025	.023	.0281	$\frac{9}{32}$ — .594
24	.022	.020	.0250	$\frac{5}{8}$ — .625
25	.020	.018	.0219	$\frac{31}{32}$ — .656
26	.018	.016	.0187	$\frac{11}{16}$ — .688
27	.016	.014	.0172	$\frac{23}{32}$ — .718
28	.014	.0125	.0156	$\frac{3}{4}$ — .750
29	.013	.011	.0141	$\frac{23}{32}$ — .781
30	.012	.010	.0125	$\frac{13}{16}$ — .812
31	.010	.009	.0109	$\frac{27}{32}$ — .844
32	.009	.008	.0102	$\frac{7}{8}$ — .875
33	.008	.007	.0093	$\frac{23}{32}$ — .906
34	.007	.006	.0085	$\frac{15}{16}$ — .937
35	.005	.005	.0078	$\frac{31}{32}$ — .969
36	.004	.005	.0070	1 — 1.000

The Birmingham (or Stubs) Gauge is universally recognized as standard by manufacturers of cold rolled strip steel. Specification by gauge number will be interpreted accordingly unless otherwise stated.

HOT ROLLED STRIP STEEL

We are prepared to furnish this from Open-hearth basis suitable for stamping requirements. In common or pickled and limed finish.

OSBORN COLD ROLLED STEEL BOX BANDS



These bands are made from Cold Rolled Flat Wire; they are soft and ductile, but of enormous tensile strength, with fine Hard Oil Finish or Galvanized. We supply these in any gauge desired, Nos. 28 and 29 being the most called for, principally in $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{7}{8}$ -inch widths. Other widths furnished if wanted. The Osborn Box Bands are put up in coils of 50 to 75 pounds each, continuous length, to coil, and packed in barrels of about 500 pounds each. The advantage of buying coils is the saving of time and no waste ends to bother with.

OATMAN'S HANDY HOOPS



These hoops are flared and holes punched in ends to fit all common sized tubs and barrels. A hammer is the only tool you need to do the work. Place the hoop around the tub or barrel, mark the holes that fit, then rivet together and drive to place. It is the only way to put a hoop together and make a nice smooth job.

PRICE LIST

No. 1	$\frac{7}{8} \times 78$ -in., 50 in a box, per box...	\$3.30
No. 2	1 $\frac{1}{2}$ x80-in., 50 in a box, per box...	4.00
No. 3	1 $\frac{1}{4}$ x80-in., 25 in a box, per box...	3.50
No. 4	1 $\frac{1}{2}$ x80-in., 25 in a box, per box...	4.00

Discount.....

STANDARD SPECIFICATIONS FOR SPECIAL OPEN-HEARTH PLATE, STRUCTURAL STEEL AND RIVET STEEL

Adopted by the Assn. Am. Steel Manufacturers.

SPECIAL OPEN-HEARTH PLATE AND RIVET STEEL

Steel shall be of three grades—Extra Soft, Fire Box and Flange or Boiler.

Extra Soft Steel

Ultimate strength, 45,000 to 55,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Elongation, 28 per cent. Cold and Quench bends, 180 degrees flat on itself, without fracture on outside of bent portion. Maximum Phosphorus, .04 per cent; maximum Sulphur, .04 per cent.

Fire Box Steel

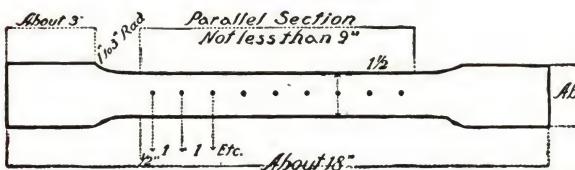
Ultimate strength, 52,000 to 62,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Elongation, 26 per cent. Cold and Quench bends, 180 degrees flat on itself, without fracture on outside of bent portion. Maximum Phosphorus, .04 per cent; maximum Sulphur, .04 per cent.

Flange or Boiler Steel

Ultimate strength, 55,000 to 65,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Elongation, 25 per cent. Cold and Quench bends, 180 degrees flat on itself, without fracture on outside of bent portion. Maximum Phosphorus, .06 per cent; maximum Sulphur, .04 per cent.

Steel for boiler rivets shall be made of extra soft grade specified above.

Test Pieces.



Pieces to be of same thickness as the plate. All tests and inspections shall be made at place of manufacture prior to shipment.

The tensile strength, limit of elasticity and ductility shall be determined from a standard test piece cut from the finished material. The standard shape of the test piece for sheared plates shall be as shown in cut. On tests cut from other material the test piece may be either the same as for plates, or it may be planed or turned parallel throughout its entire length. The elongation shall be measured on an original length of eight inches, except in rounds of $\frac{5}{8}$ -inch or less in diameter, in which case the elongation shall be measured in a length equal to eight times the diameter of section tested. Four test pieces shall be taken from each melt of finished material; two for tension and two for bending.

Material which is to be used without annealing or further treatment is to be tested in the condition in which it comes from the rolls. When material is to be annealed or otherwise treated before use, the specimen representing such material is to be similarly treated before testing.

Every finished piece of steel shall be stamped with the melt number.

All plates shall be free from surface defects and have a workmanlike finish.

STRUCTURAL STEEL

Steel may be made by either the Open-hearth or Bessemer process, and shall be of three grades, RIVET, RAILWAY BRIDGE and MEDIUM.

Rivet Steel

Ultimate strength, 48,000 to 58,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Percentage of elongation _____
1,400,000
ultimate strength.

Bending test, 180 degrees flat on itself, without fracture on outside of bent portion.

Steel for Railway Bridges

Ultimate strength, 55,000 to 65,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Percentage of elongation _____
1,400,000
ultimate strength.

Bending test, 180 degrees flat on itself, without fracture on outside of bent portion.

Medium Steel

Ultimate strength, 60,000 to 70,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Percentage of elongation _____
1,400,000
ultimate strength.

Bending test, 180 degrees to a diameter equal to thickness of piece tested, without fracture on outside of bent portion.

Test Pieces

All tests and inspections shall be made at place of manufacture prior to shipment.

About 2" The tensile strength, limit of elasticity and ductility shall be determined from a standard test piece cut from the finished material. The standard shape of the test plates shall be as shown by the above sketch.

On test cut from other material the test piece may be either the same as for plates, or it may be planed or turned parallel throughout its entire length. The elongation shall be measured on an original length of eight inches, except in rounds of $\frac{5}{8}$ -inch or less in diameter, in which case the elongation shall be measured in a length equal to eight times the diameter of section tested. Two test pieces shall be taken from each melt or blow of finished material, one for tension and one for bending.

Material which is to be used without annealing or further treatment is to be tested in the condition in which it comes from the rolls. When material is to be annealed or otherwise treated before use, the specimen representing such material is to be similarly treated before testing.

Every finished piece of steel shall be stamped with the blow or melt number, and steel for pins shall have the blow or melt number stamped on the ends. Rivet and lacing steel, and small pieces for pin plates and stiffeners, may be shipped in bundles securely wired together, with the blow or melt number on a metal tag attached.

Finished bars must be free from injurious seams, flaws or cracks, and have a workmanlike finish.

Tables
of
Weights, Bundling, Etc.

Information
Calculation
Reference

THE U. S. STANDARD GAUGE

SHOWING THICKNESS AND WEIGHT FOR ALL UNCOATED SHEETS AND PLATES OF IRON AND STEEL; ALSO GALVANIZED SHEETS

Adopted by U. S. Government, March 3, 1893

GALVANIZED STEEL		No. of Gauge	Approx. Thickness in Fractions of an Inch	Approx. Thickness in Decimal Parts of an Inch	WEIGHT PER SQ. FOOT	
Weight per Sq. Foot in Pounds	Weight per Sq. Foot in Ounces				Iron	Steel
....	....	0000000	1-2	.5	20.00	20.4
....	....	000000	15-32	.46875	18.75	19.125
....	....	000000	7-16	.4375	17.50	17.85
....	....	00000	13-32	.40625	16.25	16.575
....	....	000	3-8	.375	15.	15.30
....	....	00	11-32	.34375	13.75	14.025
....	....	0	5-16	.3125	12.50	12.75
....	....	1	9-32	.28125	11.25	11.475
....	....	2	17-64	.265625	10.625	10.8375
....	....	3	1-4	.25	10.	10.2
....	....	4	15-64	.234375	9.375	9.5625
....	....	5	7-32	.21875	8.75	8.926
....	....	6	13-64	.203125	8.125	8.2875
....	....	7	3-16	.1875	7.5	7.65
....	....	8	11-64	.171875	6.875	7.0125
....	....	9	5-32	.15625	6.25	6.375
5.781	92½	10	9-64	.140625	5.625	5.7375
5.176	82½	11	1-8	.125	5.	5.1
4.531	72½	12	7-64	.109375	4.375	4.4625
3.906	62½	13	3-32	.19375	3.75	3.825
3.281	52½	14	5-64	.078125	3.125	3.1875
2.969	47½	15	9-128	.0703125	2.8125	2.86875
2.656	42½	16	1-16	.0625	2.5	2.55
2.406	38½	17	9-160	.05625	2.25	2.295
2.156	34½	18	1-20	.05	2.	2.04
1.906	30½	19	7-160	.04375	1.75	1.785
1.656	26½	20	3-80	.0375	1.50	1.53
1.531	24½	21	11-320	.034375	1.375	1.4025
1.406	22½	22	1-32	.03125	1.25	1.275
1.281	20½	23	9-320	.028125	1.125	1.1475
1.156	18½	24	1-40	.025	1.	1.02
1.031	16½	25	7-320	.021875	.875	.8925
.9062	14½	26	3-160	.01875	.75	.765
.8437	13½	27	11-640	.0171875	.6875	.70125
.7812	12½	28	1-64	.015625	.625	.6375
.7187	11½	29	9-640	.0140625	.5625	.57355
.6562	10½	30	1-80	.0125	.5	.51
....	....	31	7-640	.0109375	.4375	.44625
....	....	32	13-1280	.01015625	.40625	.414375
....	....	33	3-320	.009375	.375	.3825
....	....	34	11-1280	.00859375	.34375	.350625
....	....	35	5-640	.0078125	.3125	.31875
....	....	36	9-1280	.00703125	.28125	.286875
....	....	37	17-2560	.006640625	.265625	.2709375
....	....	38	1-160	.00625	.25	.255

NOTE.—For the purpose of securing uniformity of gauge throughout the United States, Congress adopted the above as the Legal Standard for determining the thickness of uncoated iron and steel sheets, allowing a variation of 2½ per cent, either above or below, for practical use and application.

BIRMINGHAM GAUGE**WEIGHT OF SHEETS OF WROUGHT IRON AND STEEL****Weights Per Sq. Foot. Thickness by Birmingham (Stubs) Gauge**

No. of Gauge	Thickness in Inches	Iron	Steel
0000	.454	18.22	18.46
000	.425	17.05	17.28
00	.38	15.25	15.45
0	.34	13.64	13.82
1	.3	12.04	12.20
2	.284	11.40	11.55
3	.259	10.39	10.53
4	.238	9.55	9.68
5	.22	8.33	8.95
6	.203	8.15	8.25
7	.18	7.22	7.32
8	.165	6.62	6.71
9	.148	5.94	6.02
10	.134	5.38	5.45
11	.12	4.82	4.88
12	.109	4.37	4.43
13	.095	3.81	3.86
14	.083	3.33	3.37
15	.072	2.89	2.93
16	.065	2.61	2.64
17	.058	2.33	2.36
18	.049	1.97	1.99
19	.042	1.69	1.71
20	.035	1.40	1.42
21	.032	1.28	1.30
22	.028	1.12	1.14
23	.025	1.00	1.02
24	.022	.883	.895
25	.02	.803	.813
26	.018	.722	.732
27	.016	.642	.651
28	.014	.562	.569
29	.013	.522	.529
30	.012	.482	.488
31	.01	.401	.407
32	.009	.361	.366
33	.008	.321	.325
34	.007	.281	.285
35	.005	.201	.203
Specific gravity ..	7.704	7.806	
Weight cubic foot	481.25	487.75	
Weight cubic inch	.2787	.2823	

BROWN & SHARPE'S GAUGE**WEIGHT OF SHEETS OF WROUGHT IRON AND STEEL****Weights Per Square Foot. Thickness by American (Brown & Sharpe) Gauge**

No. of Gauge	Thickness in Inches	Iron	Steel
0000	.46	18.46	18.70
000	.4096	16.44	16.66
00	.3648	14.64	14.83
0	.3249	13.04	13.21
1	.2893	11.61	11.76
2	.2576	10.34	10.48
3	.2294	9.21	9.33
4	.2043	8.20	8.31
5	.1819	7.30	7.40
6	.1620	6.50	6.59
7	.1443	5.79	5.87
8	.1285	5.16	5.22
9	.1144	4.59	4.65
10	.1019	4.09	4.14
11	.0907	3.64	3.69
12	.0808	3.24	3.29
13	.0720	2.89	2.93
14	.0641	2.57	2.61
15	.0571	2.29	2.32
16	.0508	2.04	2.07
17	.0453	1.82	1.84
18	.0403	1.62	1.64
19	.0359	1.44	1.46
20	.0320	1.28	1.30
21	.0285	1.14	1.16
22	.0253	1.02	1.03
23	.0226	.906	.918
24	.0201	.807	.817
25	.0179	.718	.728
26	.0159	.640	.648
27	.0142	.570	.577
28	.0126	.507	.514
29	.0113	.452	.458
30	.0100	.402	.408
31	.0089	.358	.363
32	.0080	.319	.323
33	.0071	.284	.288
34	.0063	.253	.256
35	.0056	.225	.228

As there are many gauges in use differing from each other, and even the thickness of a certain specified gauge, as the Birmingham, is not assumed the same by all manufacturers, orders for sheets and wire should always state the weight per square foot, or the thickness in thousandths of an inch.

Sheet mills roll iron and steel sheets to U. S. standard gauge unless otherwise ordered. Plate mills usually roll heavy plates $\frac{1}{8}$ and heavier and light plates No. 8 to No. 12 to Birmingham gauge. Band and hoops are rolled to Birmingham gauge.

The low temperature (as compared with iron) at which steel plates have to be finished, causes a slight springing of the rolls, leaving the plate thicker in the center than on the edge. This is especially noticeable in plates less than $\frac{3}{8}$ inch thick and over 66 inches wide, which may be of full thickness on the edge and yet be as much as $\frac{1}{8}$ inch thicker in the middle.

See Allowance for Rolling on page 68, as adopted by Association American Steel Manufacturers.

TABLE OF DECIMAL EQUIVALENTS OF MILLIMETERS AND FRACTIONS OF MILLIMETERS

Mm.	Inches	Mm.	Inches	Mm.	Inches
$\frac{1}{0}$	.00079	$\frac{2}{0}$	.02047	2	.07874
$\frac{2}{0}$	.00157	$\frac{2}{0}$	.02126	3	.11811
$\frac{3}{0}$	.00236	$\frac{2}{0}$	.02205	4	.15748
$\frac{4}{0}$	.00315	$\frac{2}{0}$	.02283	5	.19685
$\frac{5}{0}$	.00394	$\frac{3}{0}$	.02362	6	.23622
$\frac{6}{0}$	.00472	$\frac{3}{0}$	.02441	7	.27559
$\frac{7}{0}$	.00551	$\frac{3}{0}$	.02520	8	.31496
$\frac{8}{0}$	.00630	$\frac{3}{0}$	.02598	9	.35433
$\frac{9}{0}$	.00709	$\frac{3}{0}$	.02677	10	.39370
$\frac{10}{0}$	.00787	$\frac{3}{0}$	.02756	11	.43307
$\frac{11}{0}$	.00866	$\frac{3}{0}$	.02835	12	.47244
$\frac{12}{0}$	.00945	$\frac{3}{0}$	.02913	13	.51181
$\frac{13}{0}$	.01024	$\frac{3}{0}$	.02992	14	.55118
$\frac{14}{0}$	.01102	$\frac{3}{0}$	.03071	15	.59055
$\frac{15}{0}$	.01181	$\frac{4}{0}$	.03150	16	.62992
$\frac{16}{0}$	.01260	$\frac{4}{0}$	.03228	17	.66929
$\frac{17}{0}$	.01339	$\frac{4}{0}$	.03307	18	.70866
$\frac{18}{0}$	.01417	$\frac{4}{0}$	.03386	19	.74803
$\frac{19}{0}$	.01496	$\frac{4}{0}$	.03465	20	.78740
$\frac{20}{0}$	.01575	$\frac{4}{0}$	.03543	21	.82677
$\frac{21}{0}$	.01654	$\frac{4}{0}$	.03622	22	.86614
$\frac{22}{0}$	.01732	$\frac{4}{0}$	.03701	23	.90551
$\frac{23}{0}$	.01811	$\frac{4}{0}$	.03780	24	.94488
$\frac{24}{0}$	.01890	$\frac{4}{0}$	.03858	25	.98425
$\frac{25}{0}$	.01969	1	.03937	26	1.06362

TABLE OF MILLIMETERS, FRACTIONS AND DECIMALS

Millimeters	Fraction	Decimals
$\frac{3}{4}$	..	.02952
1	..	.03937
..	$\frac{3}{4}$	.04687
$1\frac{1}{4}$	..	.04921
$1\frac{1}{2}$	..	.05906
..	$\frac{1}{16}$	.06250
..	$\frac{5}{16}$	.07812
2	..	.07874
$2\frac{1}{4}$	..	.08858
..	$\frac{3}{2}$	.09375
$2\frac{1}{2}$	..	.09843
3	..	.11811
..	$\frac{1}{8}$	.125
$3\frac{1}{4}$	..	.12795
$3\frac{1}{2}$	..	.1378
..	$\frac{9}{16}$	.14062
4	..	.15748
$4\frac{1}{2}$	..	.17717
..	$\frac{3}{16}$	.18750
5	..	.19685
$5\frac{1}{2}$	..	.21654
6	..	.23622
..	$\frac{1}{4}$	.25
7	..	.25591
..	..	.27559
..	$\frac{9}{32}$	.28125
..	$\frac{1}{16}$	.3125
8	..	.31496
9	..	.34533
..	$\frac{3}{8}$	.375
10	..	.3937
11	..	.43307
..	$\frac{7}{16}$	.4375
12	..	.47244
..	$\frac{1}{2}$	.5
13	..	.51181
14	..	.55118
..	$\frac{1}{32}$	.59055
15	..	.59375
..	$\frac{5}{8}$	.625
19	..	.74803
..	$\frac{3}{4}$	.75
22	..	.86614
..	$\frac{7}{8}$	.875
25	..	.98425
..
1	..	.....

METRIC UNITS AND ENGLISH EQUIVALENTS

$\frac{1}{0}$ mm. = .0003937 inch.
 10 mm. = 1 centimeter = 0.3937 inch.
 10 cm. = 1 decimeter = 3.937 inches.
 10 dm. = 1 meter = 39.37 inches.
 25.4 mm. = 1 English inch.
 1 square meter = 10.764 square feet.

1 millimeter = 0.039370 inch = $\frac{1}{25}$ inch.
 1 centimeter = 0.393704 inch.
 1 decimeter = 3.937043 inches = $3\frac{1}{16}$ in.
 1 meter = 39.370432 inches = 3.28 feet.
 1 kilometer = 39370.431960 inches = 3280.86933 feet = .6214 miles.
 1 kilogram = 2,205 pounds avoirdupois.

BUNDLING TABLE OF GALVANIZED SHEETS

Table of Standard Sizes, Showing Weights in Pounds of Sheets and Bundles (Without Bands) and Number of Sheets in One Bundle

GAUGES	10		11		12		13		14		15														
	W ^t per sq. ft. (oz.)	92.5	W ^t per sq. ft. (lbs.)	5.156	W ^t per sq. ft. (oz.)	82.5	W ^t per sq. ft. (lbs.)	4.531	W ^t per sq. ft. (oz.)	72.5	W ^t per sq. ft. (lbs.)	3.906	W ^t per sq. ft. (oz.)	62.5	W ^t per sq. ft. (lbs.)	3.281	W ^t per sq. ft. (oz.)	52.5	W ^t per sq. ft. (lbs.)	3.069	W ^t per sq. ft. (oz.)	47.5	W ^t per sq. ft. (lbs.)	2.969	
Size of Sheet	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	W ^t of Sheet	No. of Sheet's Bdle	
24 x 72	69.37	2	139	61.87	3	186	54.37	3	163	46.87	3	141	39.37	4	157	35.62	4	142	12.						
26 x 72	75.16	2	150	67.03	2	134	58.91	3	177	50.78	3	152	42.66	4	171	38.59	4	154	13.						
28 x 72	80.94	2	162	72.19	2	144	63.44	2	127	54.69	3	164	45.94	3	138	41.56	4	166	14.						
30 x 72	86.72	2	173	77.34	2	155	67.97	2	136	58.59	3	176	49.22	3	148	44.53	3	134	15.						
36 x 72	104.06	2	208	92.81	2	186	81.56	2	163	70.31	2	141	59.06	3	177	53.44	3	160	18.						
24 x 84	80.94	2	162	72.19	2	144	63.44	2	127	54.69	3	164	45.94	3	138	41.56	4	166	14.						
26 x 84	87.64	2	175	78.17	2	156	68.69	2	137	59.22	3	178	49.74	3	149	45.01	3	135	15.16						
28 x 84	94.41	2	189	84.20	2	168	74.00	2	148	63.79	3	191	53.58	3	161	48.48	3	145	16.33						
30 x 84	101.17	2	202	90.23	2	180	79.30	2	159	68.36	2	137	57.42	3	172	51.95	3	156	17.50						
36 x 84	121.41	1	121	108.28	2	217	95.16	2	190	82.03	2	164	68.91	2	138	62.34	2	125	21.						
24 x 96	92.50	2	185	82.50	2	165	72.50	2	145	62.50	2	125	52.50	3	157	47.50	3	142	16.						
26 x 96	100.19	2	200	89.36	2	179	78.53	2	157	67.70	2	135	56.86	3	171	51.45	3	154	17.33						
28 x 96	107.88	2	216	96.22	2	192	84.55	2	169	72.89	2	146	61.23	3	184	55.40	3	166	18.66						
30 x 96	115.62	2	231	103.12	2	206	90.62	2	181	78.12	2	156	65.62	2	131	59.37	3	178	20.						
36 x 96	138.75	1	139	123.75	1	124	108.75	1	109	93.75	2	187	78.75	2	157	71.25	2	142	24.						
24 x 120	115.62	2	231	103.12	2	206	90.62	2	181	78.12	2	156	65.62	2	131	59.37	3	178	20.						
26 x 120	125.22	1	125	111.68	1	112	98.15	2	196	84.61	2	169	71.07	2	142	64.30	2	129	21.66						
28 x 120	134.88	1	135	120.30	1	120	105.71	2	211	91.13	2	182	76.55	2	153	69.26	2	139	23.33						
30 x 120	144.53	1	145	128.91	1	129	113.28	1	113	97.66	2	195	82.03	2	164	74.22	2	148	25.						
36 x 120	173.44	1	173	154.69	1	155	135.94	1	136	117.19	1	117	98.44	2	197	89.06	2	178							

BUNDLING TABLE OF GALVANIZED SHEETS

Table of Standard Sizes, Showing Weights in Pounds of Sheets and Bundles (Without Bands) and Number of Sheets in One Bundle

GAUGES	16		17		18		19		20		21								
	W ^t per sq. ft. (oz.)	42.5 2.656	W ^t per sq. ft. (oz.)	38.5 2.406	W ^t per sq. ft. (oz.)	34.5 2.156	W ^t per sq. ft. (oz.)	30.5 1.906	W ^t per sq. ft. (oz.)	26.5 1.656	W ^t per sq. ft. (oz.)	24.5 1.531							
Size of Sheet	W ^t of Sheet	No. of Sheet's B'dle	W ^t of Sheet	No. of Sheet's B'dle	W ^t of Sheet	No. of Sheet's B'dle	W ^t of Sheet	No. of Sheet's B'dle	W ^t of Sheet	No. of Sheet's B'dle	W ^t of Sheet	No. of Sheet's B'dle							
24 x 72	31.87	5	159	28.87	5	144	25.87	6	155	22.87	7	160	19.87	8	159	18.37	8	147	12.
26 x 72	34.53	4	138	31.28	5	156	28.03	5	140	24.78	6	149	21.53	7	151	19.91	8	159	13.
28 x 72	37.19	4	149	33.69	5	168	30.19	5	151	26.69	6	160	23.19	7	162	21.44	7	150	14.
30 x 72	39.84	4	159	36.00	4	144	32.34	5	162	28.59	5	143	24.84	6	149	22.97	7	161	15.
36 x 72	47.81	3	143	43.31	4	173	38.81	4	155	34.31	4	137	29.81	5	149	27.56	6	165	18.
24 x 84	37.19	4	149	33.69	5	168	30.19	5	151	26.69	6	160	23.19	7	162	21.44	7	150	14.
26 x 84	40.27	4	161	36.48	4	146	32.69	5	163	28.90	5	144	25.11	6	151	23.21	7	162	15.16
28 x 84	43.38	4	174	39.29	4	157	35.21	4	141	31.13	5	156	27.05	5	135	25.01	6	150	16.33
30 x 84	46.48	3	139	42.11	4	168	37.73	4	151	33.36	5	167	28.98	5	145	26.80	6	161	17.50
36 x 84	55.78	3	167	50.53	3	152	45.28	3	136	40.03	4	160	34.78	4	139	32.16	5	161	21.
24 x 96	42.50	4	170	38.50	4	154	34.50	4	138	30.50	5	152	26.50	6	159	24.50	6	147	16.
26 x 96	46.03	3	138	41.70	4	167	37.37	4	149	33.04	5	165	28.70	5	143	26.54	6	159	17.33
28 x 96	49.57	3	149	44.90	4	180	40.24	4	161	35.57	4	142	30.91	5	155	28.57	5	143	18.66
30 x 96	53.12	3	159	48.12	3	144	43.12	4	172	38.12	4	152	33.12	5	166	30.62	5	153	20.
36 x 96	63.75	2	127	57.75	3	173	51.75	3	155	45.75	3	137	39.75	4	159	36.75	4	147	24.
24 x 120	53.12	3	159	48.12	3	144	43.12	3	129	38.12	4	152	33.12	5	166	30.62	5	153	20.
26 x 120	57.53	3	173	52.12	3	156	46.70	3	140	41.29	4	165	35.87	4	143	33.17	5	166	21.66
28 x 120	61.97	3	186	56.14	3	168	50.31	3	151	44.47	3	133	38.64	4	155	35.72	4	143	23.33
30 x 120	66.41	2	133	60.16	3	180	53.91	3	162	47.66	3	143	41.41	4	166	38.28	4	153	25.
36 x 120	79.69	2	159	72.19	2	144	64.69	2	129	57.19	3	172	49.69	3	149	45.94	3	138	30.

BUNDLING TABLE OF GALVANIZED SHEETS

Table of Standard Sizes Showing Weights in Pounds of Sheets and Bundles (Without Bands) and Number of Sheets in One Bundle.

GAUGHS		22		23		24		25		26		27	
Weight per Sq. Foot (Oz.)	22.5												
Weight per Sq. Foot (Lbs)	1.406												
Weight per Sq. Foot (Oz.)	20.5												
Weight per Sq. Foot (Lbs)	1.281												
Size of Sheet													
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BUNDLING TABLE OF GALVANIZED SHEETS

**Table of Standard Sizes Showing Weights in Pounds of Sheets and Bundles
(Without Bands) and Number of Sheets in One Bundle**

GAUGES		28		29		30				
Size of Sheet	Weight of Sheet	No. of Sheets	Weight of Bundle	Weight of Sheet	No. of Sheets	Weight of Bundle	Weight of Sheet	No. of Sheets	Weight of Bundle	Square Feet per Sheet
24 x 72	9.37	16	150	8.62	17	147	7.87	19	150	12.
26 x 72	10.16	15	152	9.34	16	149	8.53	17	145	13.
28 x 72	10.94	14	153	10.06	15	151	9.19	16	147	14.
30 x 72	11.72	13	152	10.78	15	162	9.84	15	148	15.
36 x 72	14.06	11	155	12.94	12	155	11.81	13	154	18.
24 x 84	10.94	14	153	10.06	15	151	9.19	16	147	14.
26 x 84	11.84	13	154	10.90	14	153	9.95	15	149	15.16
28 x 84	12.76	12	153	11.74	13	153	10.72	14	150	16.33
30 x 84	13.67	11	150	12.58	12	151	11.48	13	149	17.50
36 x 84	16.41	9	148	15.09	10	151	13.78	11	152	21.
24 x 96	12.50	12	150	11.50	13	149	10.50	15	157	16.
26 x 96	13.54	11	149	12.46	12	150	11.37	13	148	17.33
28 x 96	14.58	10	146	13.41	11	148	12.25	12	147	18.66
30 x 96	15.62	10	156	14.37	10	144	13.12	11	144	20.
36 x 96	18.75	8	150	17.25	9	155	15.75	10	157	24.
24 x 120	15.62	10	156	14.37	10	144	13.12	11	144	20.
26 x 120	16.92	9	152	15.57	10	156	14.21	11	156	21.66
28 x 120	18.23	8	146	16.77	9	151	15.31	10	153	23.33
30 x 120	19.53	8	156	17.97	9	162	16.41	9	148	25.
36 x 120	23.44	7	164	21.56	7	151	19.69	8	158	30.

TABLE OF TRUNK IRON BOXED

Showing Weight and Sheetage

Gauge	Size	Sheets per Box	Weight per Square Foot U. S. S. Gauge	Approximate Net Weight per Box
28	20 x 40 in.	64	.625 lbs.	222.22 lbs.
30	20 x 40 in.	79	.5 lbs.	219.44 lbs.
32	20 x 40 in.	79	.4062 lbs.	178.30 lbs.
34	20 x 40 in.	79	.3437 lbs.	150.86 lbs.
36	20 x 40 in.	90	.2812 lbs.	140.63 lbs.
38	20 x 28 in.	225	.25 lbs.	218.75 lbs.
38	20 x 40 in.	112	.25 lbs.	155.55 lbs.

All weights are subject to the 2½ per cent allowable variation in rolling.

BUNDLING TABLE OF BLACK SHEETS

Table of Standard Sizes Showing Weights of Sheets and Bundles (Without Bands) and Number of Sheets in One Bundle

24 Inches Wide

GAUGE	72 Inches Long		84 Inches Long		96 Inches Long		101 Inches Long		108 Inches Long		120 Inches Long		GAUGE			
	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet				
10	67.5	2	135	78.75	2	157	90.	2	180	94.69	2	168	101.25	112.5	10	
11	60.	3	180	70.	2	140	80.	2	160	84.17	2	147	90.	100.	11	
12	52.5	3	157	61.25	2	122	70.	2	140	73.65	2	147	78.75	2	157	12
13	45.	3	135	52.5	3	157	60.	2	120	63.13	2	126	67.5	2	135	13
14	37.5	4	150	43.75	3	131	50.	3	150	52.6	3	158	56.25	2	125	14
15	33.75	4	135	39.38	4	157	45.	3	135	47.34	3	142	50.63	3	152	15
16	30.	5	150	35.	4	140	40.	4	160	42.08	4	168	45.	3	135	16
17	27.	6	162	31.5	5	157	36.	4	144	37.88	4	151	40.5	4	162	17
18	24.	6	144	28.	5	140	32.	5	160	33.67	4	135	36.	4	144	18
19	21.	7	147	24.5	6	147	28.	5	140	29.46	5	147	31.5	4	140	19
20	18.	8	144	21.	7	147	24.	6	144	25.25	6	151	27.	5	135	20
21	16.5	9	148	19.25	8	154	22.	7	154	23.15	6	139	24.75	6	148	21
22	15.	10	150	17.5	8	140	20.	7	140	21.04	7	147	22.5	7	157	22
23	13.5	11	148	15.75	9	142	18.	8	144	18.94	8	151	20.25	7	142	23
24	12.	12	144	14.	11	154	16.	9	144	16.83	9	151	18.	8	144	24
25	10.5	14	147	12.25	12	147	14.	10	140	14.73	10	147	15.75	9	142	25
26	9.	16	144	10.5	14	147	12.	12	144	12.63	12	151	13.5	11	148	16
27	8.25	18	148	9.63	15	144	11.	13	143	11.57	12	139	12.38	12	148	17
28	7.5	20	150	8.75	17	149	10.	15	150	10.52	14	147	11.25	13	142	28
29	6.75	22	148	7.88	19	150	9.	16	144	9.47	16	151	10.13	15	152	11.25
30	6.	25	150	7.	21	147	8.	18	144	8.42	18	151	9.	17	153	11.25
													10.	15	150	11.25

Weight of one Band .918 Pounds.

BUNDLING TABLE OF BLACK SHEETS

Table of Standard Sizes Showing Weights of Sheets and Bundles (Without Bands) and Number of Sheets in

One Bundle

26 Inches Wide

Gauge	72 Inches Long		84 Inches Long		96 Inches Long		101 Inches Long		108 Inches Long		120 Inches Long		Gauge
	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	
10	73.13	2.146	85.31	2.171	97.5	2.195	102.28	2.182	109.69	2.195	121.88	2.195	10
11	65.65	2.130	75.83	2.152	86.67	2.173	91.18	2.159	97.5	2.171	108.33	2.171	11
12	56.88	3.171	66.35	2.133	75.83	2.152	79.78	2.159	85.31	2.171	94.79	2.171	12
13	48.75	3.146	56.88	3.171	65.17	3.142	68.39	3.137	73.13	2.146	81.25	2.162	13
14	40.63	4.162	47.4	3.142	54.17	3.142	57.94	3.171	60.94	2.122	67.71	2.135	14
15	36.56	4.146	42.66	3.128	48.75	3.146	51.29	3.154	54.84	3.164	60.94	2.122	15
16	32.5	5.162	37.92	4.152	43.33	3.130	45.59	3.137	48.75	3.146	54.17	3.162	16
17	29.25	5.146	34.13	4.136	39.	4.156	41.03	4.164	43.88	3.132	48.75	3.145	17
18	26.	6.156	30.33	5.152	34.67	4.139	36.47	4.146	39.	4.156	43.33	3.130	18
19	22.75	7.159	26.54	6.159	30.33	5.152	31.92	5.160	34.13	4.136	37.92	4.152	19
20	19.5	8.156	22.75	7.159	26.	6.156	27.35	5.137	29.25	5.146	32.5	5.162	20
21	17.88	8.143	20.85	7.146	23.83	6.143	25.08	6.150	26.81	6.161	29.79	5.149	21
22	16.25	9.146	18.96	8.152	21.67	7.152	22.79	7.159	24.37	6.146	27.98	6.162	22
23	14.63	10.146	17.06	9.153	19.5	8.156	20.51	7.143	21.94	7.153	24.37	6.146	23
24	13.	11.143	15.16	10.152	17.33	9.156	18.24	8.146	19.5	8.156	21.67	7.152	24
25	11.38	13.148	13.27	11.146	15.17	10.152	15.96	9.144	17.06	9.153	18.96	8.152	25
26	9.75	15.146	11.38	13.148	13.	11.143	13.68	11.150	14.63	10.146	16.25	9.146	26
27	8.94	16.143	10.43	14.146	11.92	12.143	12.54	12.150	13.41	11.147	14.9	10.149	27
28	8.13	18.146	9.48	16.152	10.83	14.152	11.4	13.148	12.19	12.146	13.54	11.149	28
29	7.31	20.146	8.53	17.145	9.75	15.146	10.26	14.144	10.97	14.153	12.19	12.146	29
30	6.5	23.149	7.58	19.144	8.67	17.147	9.12	16.146	9.75	15.146	10.83	14.152	30

Weight of one Band .986 Pounds.

BUNDLING TABLE OF BLACK SHEETS

Table of Standard Sizes, Showing Weights of Sheets and Bundles (Without Bands) and Number of Sheets in
One Bundle

28 Inches Wide

GAUGE	72 Inches Long			84 Inches Long			96 Inches Long			101 Inches Long			108 Inches Long			120 Inches Long			GAUGE
	No. of Sheets	Weight per Sheet	Weight per Bundle	No. of Sheets	Weight per Sheet	Weight per Bundle	No. of Sheets	Weight per Sheet	Weight per Bundle	No. of Sheets	Weight per Sheet	Weight per Bundle	No. of Sheets	Weight per Sheet	Weight per Bundle	No. of Sheets	Weight per Sheet	Weight per Bundle	
10	78.75	2	157	91.88	2	184	105.33	2	187	98.19	2	196	110.47	2	196	118.13	2	184	131.25
11	70.	2	140	81.67	2	163	93.33	2	163	85.92	2	172	91.88	2	172	105.	2	157	116.67
12	61.25	2	122	71.46	2	143	81.67	2	140	73.65	2	147	78.75	2	147	65.63	2	131	102.08
13	52.5	3	157	61.25	2	122	70.	2	140	58.33	3	175	61.37	2	123	55.23	3	166	87.5
14	43.75	3	131	51.04	3	153	52.5	3	157	52.5	3	175	52.5	3	175	59.06	3	177	72.92
15	39.37	4	157	45.94	3	138	46.67	3	140	49.09	3	140	49.09	3	140	52.5	3	157	65.63
16	35.	4	140	40.83	4	163	46.67	4	147	42.	4	168	44.19	3	132	47.25	3	142	58.33
17	31.5	5	157	36.75	4	147	37.33	4	149	39.28	4	157	42.	4	168	52.5	3	157	75.17
18	28.	5	140	32.67	5	163	32.67	4	149	34.37	4	163	34.37	4	137	36.75	4	147	46.67
19	24.5	6	147	28.58	5	143	32.67	5	147	29.46	5	147	31.5	5	147	36.75	4	147	46.67
20	21.	7	147	24.5	6	147	28.	5	147	27.01	6	154	27.01	6	162	28.87	5	147	46.67
21	19.25	8	154	22.46	7	157	25.67	6	154	24.55	6	147	26.25	6	157	29.17	5	147	46.67
22	17.5	8	140	20.42	7	143	23.33	6	140	22.09	7	155	23.62	6	142	26.25	6	157	46.67
23	15.75	9	142	18.37	8	147	21.	7	147	19.64	8	147	21.	7	147	23.33	6	140	46.67
24	14.	11	154	16.33	9	147	18.67	8	147	17.19	9	155	18.38	8	147	20.42	7	143	46.67
25	12.25	12	147	14.29	10	143	16.33	9	147	14.73	10	147	15.75	9	142	17.5	8	140	46.67
26	10.5	14	147	12.25	12	147	14.	11	154	13.5	11	148	14.44	10	144	16.04	9	144	46.67
27	9.63	16	154	11.23	13	146	12.83	12	154	11.67	13	152	12.27	12	147	13.13	11	144	46.67
28	8.75	17	149	10.21	14	143	10.5	14	147	11.05	13	144	11.81	13	147	14.58	10	146	46.67
29	7.88	19	150	9.19	16	147	9.33	16	155	9.82	15	147	10.5	15	157	13.13	11	144	46.67
30	7.	21	147	8.17	19	155	8.17	21	147	9.82	15	147	10.5	15	157	11.67	14	144	46.67

Weight of one Band 1.054 Pounds.

BUNDLING TABLE OF BLACK SHEETS

Table of Standard Sizes, Showing Weights of Sheets and Bundles (Without Bands) and Number of Sheets in One Bundle

30 Inches Wide

GAUGE		72 Inches Long		84 Inches Long		96 Inches Long		101 Inches Long		108 Inches Long		120 Inches Long		GAUGE	
No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet	No. of Sheets	Weight per Sheet
10	84.38	2	169	98.44	2	175	112.5	118.36	126.56	140.63	10	11	12	13	14
11	75.	2	150	87.5	2	153	100.	105.21	112.5	125.	109.38	11	12	13	14
12	65.63	2	131	76.56	2	131	87.5	92.06	98.44	104.	93.75	2	187		
13	56.25	3	169	65.63	2	131	78.91	125.	158	84.38	2	169	78.13	2	156
14	46.88	3	141	54.69	3	164	62.5	125.	131	70.31	2	141	2	141	15
15	42.19	4	169	49.22	3	148	56.25	169.	118	63.28	2	126	70.31	2	125
16	37.5	4	150	43.75	3	131	50.	150.	52.6	3	158	56.25	3	169	16
17	33.75	4	135	39.38	4	157	45.	135.	47.34	3	142	50.63	3	152	17
18	30.	5	150	35.	4	140	40.	4	160	42.08	4	168	45.	3	135
19	26.25	6	157	30.	5	153	35.	4	140	36.83	4	147	39.38	4	157
20	22.5	7	157	26.25	6	157	30.	5	150	31.56	5	158	38.75	4	135
21	20.63	7	144	24.06	6	144	27.5	6	165	28.94	5	145	30.94	5	155
22	18.75	8	150	21.88	7	153	25.	6	150	26.3	6	158	28.12	5	141
23	16.88	9	152	19.69	8	157	22.5	7	157	23.67	6	142	25.31	6	152
24	15.	10	150	17.5	8	140	20.	7	140	21.04	6	147	22.5	7	157
25	13.13	11	144	15.31	10	153	17.5	8	140	18.41	8	147	19.69	8	157
26	11.25	13	146	13.13	11	144	15.	10	150	15.78	9	142	16.88	9	152
27	10.31	14	144	12.03	12	144	13.75	11	151	14.47	10	145	15.47	10	155
28	9.38	16	150	10.94	14	153	12.5	12	150	13.15	11	145	14.06	11	155
29	8.44	18	152	9.84	15	148	11.25	13	146	11.84	12	142	12.66	12	156
30	7.5	20	150	8.75	17	149	10.	15	150	10.52	14	147	11.25	13	146

Weight of one Band 1.122 Pounds.

BUNDLING TABLE OF BLACK SHEETS

Table of Standard Sizes Showing Weights of Sheets and Bundles (Without Bands) and Number of Sheets in One Bundle

36 Inches Wide

Gauge	72 Inches Long			84 Inches Long			96 Inches Long			101 Inches Long			108 Inches Long			120 Inches Long			Gauge
	No. of Sheets	Weight per Sheet	Bundles	No. of Sheets	Weight per Sheet	Bundles	No. of Sheets	Weight per Sheet	Bundles	No. of Sheets	Weight per Sheet	Bundles	No. of Sheets	Weight per Sheet	Bundles	No. of Sheets	Weight per Sheet	Bundles	
10	90.25	2	180	118.13	2	135.	120.	142.03	2	189	151.88	2	168.75	10	168.75	2	187	14	
11	90.75	2	157	91.88	2	184	105.	125.25	2	158	135.	2	152	11	150.	2	169	15	
12	67.5	2	135	78.75	2	157	90.	110.47	2	189	118.13	2	152	11	131.25	2	169	15	
13	67.5	2	131	65.63	2	131	75.	94.69	2	189	101.25	2	158	12	112.5	2	169	15	
14	56.25	3	169	52.5	3	152	59.06	118	2	135	71.01	2	142	13	93.38	2	169	15	
15	50.63	3	152	33.5	3	157	52.5	120	2	135	63.13	2	126	14	75.94	2	169	15	
16	45	3	135	46.2	4	162	3	142	54.	3	162	55.81	3	170	15	75.	2	150	16
17	40.5	4	162	47.25	3	142	42.	46.2	4	168	50.5	3	144	17	60.75	2	135	17	
18	36	4	144	42.	4	144	36.75	44.7	4	168	44.19	3	132	18	54.	3	162	20	
19	31.5	5	157	31.5	5	157	31.5	31.5	5	157	36.	4	144	19	47.25	3	142	20	
20	27	5	135	28.88	5	144	33.	33.	4	144	37.88	4	151	21	40.5	4	162	20	
21	24.75	6	148	26.25	6	157	30.	30.	5	150	34.72	4	139	21	37.13	4	148	21	
22	22.5	7	157	23.63	6	142	27.	6	162	31.56	5	158	22	33.75	5	169	22		
23	20.25	7	142	21.	7	147	24.	6	144	28.41	5	142	23	30.38	5	152	23		
24	18	8	144	15.75	9	142	18.38	8	147	25.25	6	151	24	27.	6	162	30.		
25	15.75	9	142	15.75	9	142	21.	7	147	22.1	7	155	24	23.63	6	142	25		
26	13.5	11	148	15.75	9	142	18.	8	144	18.94	8	151	25	20.25	7	142	25		
27	12.38	12	148	14.44	10	144	16.5	9	148	17.36	9	156	26	18.56	8	148	26		
28	11.25	13	146	13.13	11	144	15.	10	150	15.78	9	142	27	16.88	9	152	27		
29	10.13	15	152	11.81	13	153	13.5	11	148	14.2	10	142	28	15.19	10	152	28		
30	9.	16	144	10.5	14	147	12.	12	144	12.62	12	151	29	13.5	11	148	15.		

Weight of one Band 1.224 Pounds.

BUNDLING TABLE OF WOOD'S CLEANED, REFINED SMOOTH FINISH SHEETS

Table of Standard Sizes Showing Weights in Pounds of Sheets and Bundles (Without Bands) and Number of Sheets in One Bundle

GAUGE	Size of Sheet	14				15				16				17				18				19				20				21							
		No. of Sheets	Wt. of BDl.																																		
24 x 84	43.75	4	175	39.38	4	157	35.	5	175	31.50	5	157	28.	6	168	24.5	7	171	21.	8	168	19.25	8	154	14.	14	14	14	14	14	14						
26 x 84	47.40	3	142	42.66	4	171	37.92	4	152	34.25	5	171	30.33	6	182	26.54	6	159	22.75	7	159	20.85	8	166	15.16	16	16	16	16	16	16	16					
28 x 84	51.04	3	153	45.94	4	184	40.83	4	163	36.75	5	184	32.67	5	163	28.58	6	171	24.5	6	147	22.46	7	156	16.33	16	16	16	16	16	16	16					
30 x 84	54.69	3	164	49.22	3	148	43.75	4	175	39.38	4	158	35.	5	175	30.63	5	153	26.25	6	157	24.06	7	168	17.5	17	17	17	17	17	17	17					
24 x 96	50.	3	150	45.	4	180	40.	4	160	36.	4	144	32.	5	160	28.	5	168	24.	7	168	22.	7	154	16.	16	16	16	16	16	16						
26 x 96	54.17	3	162	48.75	3	146	43.33	4	173	39.	4	156	34.67	5	173	30.33	5	151	26.	6	156	23.83	7	166	17.33	17	17	17	17	17	17	17					
28 x 96	58.33	3	175	52.5	3	157	46.67	4	187	42.	4	168	37.33	4	150	32.67	5	163	28.	6	168	25.67	6	154	18.66	18	18	18	18	18	18	18					
30 x 96	62.5	3	188	56.25	3	169	50.	3	150	45.	4	180	40.	4	160	35.	5	175	30.	5	150	27.5	6	165	20.	20	20	20	20	20	20						
24 x 101	52.60	3	158	47.34	3	142	42.08	4	168	37.88	4	152	33.67	5	168	29.46	5	147	25.25	6	152	23.15	7	162	16.83	16	16	16	16	16	16	16					
26 x 101	57.	3	171	51.29	3	154	45.59	3	137	41.03	4	164	36.47	4	146	31.92	5	160	27.35	6	164	25.08	6	150	18.24	18	18	18	18	18	18	18					
28 x 101	61.37	3	184	55.23	3	166	49.09	3	147	44.19	3	133	39.28	4	157	34.37	4	137	29.46	5	147	27.01	6	162	19.64	19	19	19	19	19	19	19					
30 x 101	65.76	3	197	59.18	3	178	52.60	3	158	47.34	3	142	42.08	4	168	36.83	4	147	31.56	5	158	28.94	5	145	21.04	21	21	21	21	21	21	21					
GAUGE	Size of Sheet	22				23				24				25				26				27				28											
		No. of Sheets	Wt. of BDl.																																		
24 x 84	17.50	9	157	15.75	10	157	14.	11	154	12.25	12	147	10.50	14	147	9.63	15	144	8.75	17	149	7.17	149	6.33	149	5.50	149	4.67	149	3.83	149	3.00					
26 x 84	18.96	9	171	17.06	9	153	15.16	10	151	13.27	12	159	11.38	13	148	10.43	15	156	9.48	16	152	8.63	152	7.83	152	7.00	152	6.20	152	5.40	152	4.60					
28 x 84	20.42	8	162	18.37	9	165	16.33	10	163	14.29	11	157	12.25	12	147	11.23	14	157	10.21	15	153	9.33	153	8.50	153	7.67	153	6.83	153	6.00	153	5.17					
30 x 84	21.88	8	175	19.69	8	158	17.5	9	157	15.31	10	153	13.13	11	144	12.03	13	156	10.94	14	153	10.12	153	9.30	153	8.47	153	7.64	153	6.81	153	6.00					
24 x 96	20.	8	160	18.	8	144	16.	10	160	14.	11	154	12.	12	144	11.	14	154	10.	15	150	9.17	150	8.33	150	7.50	150	6.67	150	5.83	150	5.00					
26 x 96	21.67	7	152	19.5	8	156	17.33	9	156	15.17	10	152	13.	12	156	11.92	12	143	10.	142	15	152	10.00	152	9.17	152	8.33	152	7.50	152	6.67	152	5.83				
28 x 96	23.33	7	163	21.	7	147	18.66	8	149	16.33	10	163	14.	11	154	12.83	12	154	11.67	13	153	10.83	13	152	10.00	152	9.17	152	8.33	152	7.50	152	6.67				
30 x 96	25.	6	150	22.5	7	158	20.	8	160	17.5	9	158	15.	10	150	13.75	11	151	12.5	12	150	11.75	12	150	10.92	12	150	10.00	150	9.17	150	8.33	150	7.50			
24 x 101	21.04	7	147	18.94	8	152	16.83	9	152	14.73	10	147	12.63	12	151	11.57	13	150	10.	152	14	148	13.00	148	12.17	148	11.33	148	10.50	148	9.67	148	8.83				
26 x 101	22.79	7	160	20.51	7	144	18.24	9	164	15.96	10	160	13.68	11	150	12.54	12	150	11.	14	148	10.83	148	10.00	148	9.17	148	8.33	148	7.50	148	6.67	148	5.83			
28 x 101	24.55	6	147	22.09	7	155	19.64	8	157	17.19	9	154	14.73	10	148	13.5	11	149	12.27	12	148	11.44	12	148	10.61	12	148	9.78	148	8.95	148	8.12	148	7.29			
30 x 101	26.3	6	158	23.67	6	142	21.04	8	168	18.41	9	166	15.78	10	158	14.47	10	147	13.15	11	144	12.33	11	144	11.50	11	144	10.67	11	144	9.83	144	9.00	144	8.17	144	7.34

**WOOD'S PATENT PLANISHED SHEET IRON AND PLANISHED
LOCOMOTIVE JACKET IRON**

Table of Standard Sizes, Showing Weights of Sheets in Pounds

Gauges.	18			19			20			21			22			23			Sq. ft. per Sheet
	18	19	20	18	19	20	18	19	20	18	19	20	18	19	20	18	19	20	
28 x 45	16.25	to	17	14.75	to	15.25	12	to	12.5	11	to	11.5	10	to	10.25	9.25	to	9.5	8.75
28 x 48	17.25	to	18	15.75	to	16.25	13	to	13.5	12	to	14.5	10.5	to	10.75	10	to	10.25	9.33
28 x 56	20.25	to	21	18.25	to	18.75	14.75	to	15.25	14	to	14.5	12.25	to	12.5	11.25	to	11.5	10.89
28 x 60	21.5	to	21.75	19.5	to	20	16.25	to	16.75	14.75	to	15.25	13.25	to	13.5	12.5	to	12.75	11.66
28 x 72	26	to	27	23.5	to	24	18.5	to	19	17.75	to	18.25	16	to	16.25	15.25	to	15.5	14
28 x 84	30.5	to	31.25	27.5	to	28	22.75	to	23.5	20.75	to	21.25	18.75	to	19	17.25	to	17.5	16.33
30 x 45	17.25	to	18	15.75	to	16.5	13	to	13.75	12	to	12.75	10.25	to	10.75	10.25	to	10.5	9.37
30 x 48	18.25	to	19	16.75	to	17.5	14	to	14.75	13	to	13.5	11.25	to	11.75	10.75	to	11.25	10
30 x 56	21.25	to	22	19.5	to	20	16.25	to	16.75	15	to	15.5	13.25	to	13.75	12.5	to	13	11.66
30 x 60	23	to	23.75	21	to	21.5	17.25	to	17.75	16.25	to	16.75	14.25	to	14.75	13.5	to	14	12.5
30 x 72	27.5	to	28.25	25.25	to	25.75	20.75	to	21.25	19.5	to	19.75	17	to	17.75	16.25	to	16.75	15
30 x 84	32.25	to	33	29.5	to	30	24.5	to	25	21.5	to	23	19.75	to	20.25	19	to	19.5	17.5
Gauges.	24			25			26			27			28			28			Sq. ft. per Sheet
28 x 45	8.25	to	8.5	7.25	to	7.5	6.5	to	6.75	6.25	to	6.5	5.5	to	5.75	.....	.....	.....	8.75
28 x 48	8.75	to	9	7.75	to	8	7	to	7.25	6.75	to	7.25	6	to	6.25	.....	.....	.....	9.33
28 x 56	10.25	to	10.5	9	to	9.5	8.25	to	8.5	7.75	to	8.25	6.75	to	7.25	.....	.....	.....	10.89
28 x 60	10.75	to	10.25	9.75	to	10.25	8.75	to	9.25	8	to	8.5	7.5	to	8	.....	.....	.....	11.66
28 x 72	13.25	to	13.5	11.75	to	12.25	10.75	to	11	10	to	10.5	9	to	9.5	.....	.....	.....	14
28 x 84	15.5	to	16	13.75	to	14.25	12.75	to	13	11.5	to	12	10.5	to	11	.....	.....	.....	16.33
30 x 45	8.5	to	9	7.5	to	8	7	to	7.25	6.5	to	6.75	6	to	6.25	.....	.....	.....	9.37
30 x 48	9.25	to	9.75	8.25	to	8.75	7.5	to	8	7	to	7.5	6.5	to	6.75	.....	.....	.....	10
30 x 56	11.25	to	11.75	9.5	to	9.75	9	to	9.25	8.25	to	8.5	7.25	to	7.5	.....	.....	.....	11.66
30 x 60	12	to	12.5	10.25	to	10.75	9.5	to	9.75	9	to	9.25	8	to	8.25	.....	.....	.....	12.5
30 x 72	14	to	14.75	12.25	to	12.75	11.5	to	11.75	10.25	to	10.75	9.5	to	9.75	.....	.....	.....	15
30 x 84	16.25	to	16.75	14.25	to	14.75	13.5	to	13.75	12.25	to	12.75	11.25	to	11.75	11.25	to	11.5	17.5

Table Showing Number of Sheets Packed in a Case

Gauges	18	19	20	21	22	23	24	25	26	27	28	Gauges	18	19	20	21	22	23	24	25	26	27	28
28 x 45	15	17	20	22	25	27	30	34	37	39	44	30 x 45	14	15	19	20	24	28	32	35	37	32	
28 x 48	14	16	19	20	24	25	28	32	35	39	44	30 x 48	14	15	17	19	22	26	29	32	34	29	
28 x 56	12	14	17	18	20	22	24	27	30	31	35	30 x 56	12	13	15	17	19	20	22	26	27	30	
28 x 60	12	13	17	19	20	23	25	28	30	32	37	30 x 60	11	12	14	15	17	18	20	24	26	27	
28 x 72	9	11	13	14	16	17	19	21	23	24	27	30 x 72	9	10	12	13	14	15	18	20	22	24	
28 x 84	8	9	11	12	14	15	16	18	20	21	23	30 x 84	8	9	10	11	13	13	15	17	19	20	

WEIGHT OF FLAT BAR STEEL

Per Lineal Foot

THICKNESS IN FRACTIONS OF INCHES																						
$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{11}{16}$	$\frac{13}{16}$	$\frac{15}{16}$	2								
$\frac{1}{2}$	.1060	.2125	.319	.425	.531	.638	.744	.850	1.06	1.28	1.49	1.69	1.89								
$\frac{5}{16}$	.1594	.2656	.399	.531	.664	.797	.929	1.06	1.33	1.594	1.913	2.232	2.52								
$\frac{3}{4}$	.1859	.3188	.478	.636	.797	.957	1.116	1.275	1.594	1.913	2.232	2.52	2.82								
$\frac{7}{8}$	.212	.3720	.558	.743	.929	1.116	1.302	1.487	1.859	2.12	2.55	2.98	3.40	3.83	4.25	4.67	5.10	5.52	5.95	6.38	6.80
1	.2391	.4782	.717	.959	1.20	1.43	1.68	1.92	2.39	2.87	3.35	3.83	4.30	4.79	5.26	5.74	6.22	6.70	7.17	7.65		
$1\frac{1}{16}$	.2656	.5312	.797	1.06	1.33	1.59	1.86	2.12	2.65	3.19	3.72	4.25	4.78	5.31	5.84	6.38	6.90	7.44	7.97	8.50	
$1\frac{1}{4}$	.292	.585	.875	1.17	1.46	1.76	2.05	2.34	2.92	3.51	4.09	4.69	5.26	5.85	6.43	7.02	7.60	8.19	8.77	9.33	
$1\frac{3}{8}$	.319	.638	.957	1.28	1.59	1.92	2.23	2.55	3.19	3.83	4.47	5.10	5.74	6.38	7.02	7.65	8.29	8.93	9.57	10.20	
$1\frac{1}{2}$	.346	.692	1.04	1.38	1.73	2.08	2.42	2.72	3.46	4.15	4.84	5.53	6.22	6.91	7.60	8.29	8.98	9.67	10.36	11.05	
$1\frac{5}{16}$	.372	.744	1.15	1.49	1.86	2.23	2.60	2.98	3.72	4.47	5.20	5.95	6.70	7.44	8.18	8.93	9.67	10.42	11.15	11.90	
$1\frac{7}{8}$	.407	.850	1.28	1.70	2.12	2.55	2.98	3.40	4.25	5.10	5.95	6.80	7.65	8.50	9.35	10.20	11.05	11.90	12.75	13.60	
$2\frac{1}{4}$.425	.478	.96	1.44	1.92	2.39	2.87	3.35	3.83	4.78	5.75	6.69	7.65	8.61	9.57	10.52	11.48	12.43	13.40	14.34	15.30	
$2\frac{1}{2}$	.531	1.06	1.59	2.12	2.65	3.19	3.72	4.25	5.31	6.38	7.44	8.50	9.57	10.63	11.69	12.75	13.81	14.88	15.94	17.00	
$2\frac{3}{4}$	.584	1.17	1.75	2.34	2.92	3.51	4.09	4.67	5.84	7.02	8.18	9.35	10.52	11.69	12.85	14.03	15.19	16.37	17.53	18.70	
3	.638	1.28	.91	1.55	2.19	2.83	3.45	4.15	4.83	5.53	6.91	8.29	9.67	11.05	12.43	13.81	15.20	16.58	17.85	19.13	20.40	
$3\frac{1}{4}$.691	1.38	.07	2.76	3.45	4.15	4.83	5.53	6.20	7.00	8.08	10.10	11.90	13.39	14.87	16.36	17.85	19.34	20.83	22.31	23.80	
$3\frac{1}{2}$	.744	1.49	2.23	2.98	3.72	4.47	5.20	5.95	7.44	8.93	10.41	11.90	13.39	14.87	16.36	17.85	19.34	20.83	22.31	23.80	
$3\frac{3}{4}$	.80	1.59	2.39	3.19	3.99	4.78	5.58	6.38	7.97	9.57	11.16	12.75	14.34	15.94	17.53	19.13	20.72	22.32	23.91	25.50	
4	.85	1.70	2.55	3.40	4.25	5.10	5.95	6.80	8.50	10.20	11.90	13.60	15.30	17.00	17.00	18.70	20.40	22.10	23.80	25.50	27.20	
$4\frac{1}{4}$	.90	1.81	2.71	3.61	4.52	5.42	6.32	7.22	9.03	10.84	12.65	14.45	16.26	18.06	19.87	21.68	23.48	25.20	27.10	28.90	
$4\frac{1}{2}$	.96	1.91	2.87	3.83	4.78	5.74	6.70	7.65	9.57	11.48	13.39	15.30	17.22	19.13	21.04	22.95	24.87	26.78	28.69	30.60	
$4\frac{3}{4}$	1.01	2.02	3.03	4.04	5.05	6.06	7.07	8.08	10.10	12.12	14.13	16.15	18.17	20.19	22.21	24.23	26.25	28.27	30.28	32.30		
5	1.06	2.13	3.19	4.25	5.31	6.38	7.44	8.50	10.63	12.75	14.87	17.00	19.13	21.25	23.38	25.50	27.63	29.75	31.87	34.00		
$5\frac{1}{4}$	1.116	2.232	3.35	4.46	5.58	6.69	7.81	8.93	11.16	13.39	15.62	17.85	20.08	22.32	24.54	27.62	30.39	33.47	36.50	39.57		
$5\frac{1}{2}$	1.169	2.338	3.51	4.67	5.84	7.02	8.18	9.35	11.69	14.03	16.36	18.70	20.14	23.38	25.71	28.05	30.39	32.73	35.06	37.40		
$5\frac{3}{4}$	1.222	2.444	3.80	4.04	5.05	6.06	7.07	8.08	10.10	12.12	14.13	16.15	18.17	20.19	22.21	24.23	26.25	28.27	30.28	32.30		
6	1.275	2.550	3.88	5.10	6.38	7.65	8.93	10.20	12.75	15.30	17.85	20.40	22.95	25.50	28.15	30.60	33.15	35.70	38.25	40.80		
$6\frac{1}{4}$	1.328	2.656	3.99	5.31	6.64	7.97	9.29	10.63	13.28	15.94	18.60	21.25	23.91	26.26	29.22	31.88	34.53	37.19	39.85	42.50		
$6\frac{1}{2}$	1.381	2.762	4.14	5.53	6.90	8.29	9.67	11.05	13.81	16.58	19.34	22.10	24.87	27.62	30.39	33.15	35.91	38.68	41.44	44.20		
$6\frac{3}{4}$	1.434	2.869	4.30	5.74	7.17	8.61	10.04	11.48	14.34	17.22	20.08	22.95	25.82	28.69	31.56	34.43	37.99	40.17	43.03	45.90		
7	1.487	2.975	4.46	5.95	7.44	8.93	10.41	11.90	14.87	17.85	20.83	23.80	26.78	29.75	32.72	35.70	38.67	41.65	44.63	47.82		
$7\frac{1}{2}$	1.594	3.188	4.78	6.36	7.97	9.57	11.16	12.75	15.94	19.13	22.32	25.50	28.68	31.88	35.06	38.26	41.44	44.63	47.82	51.00		
8	1.70	3.40	5.10	6.80	8.50	10.20	11.90	13.60	17.00	20.40	23.80	27.20	30.60	34.00	37.40	43.12	39.74	43.35	46.96	50.58		
$8\frac{1}{2}$	1.806	3.612	5.42	7.22	9.03	10.84	12.64	14.44	18.06	21.68	25.30	28.90	32.52	36.12	39.74	43.35	46.96	50.58	54.20	57.80		
9	1.913	3.826	5.74	7.65	9.56	11.48	13.40	15.30	19.13	22.96	26.78	30.60	34.43	38.26	42.08	45.90	49.73	53.56	57.38	61.20		
$9\frac{1}{2}$	2.019	4.037	6.06	8.08	10.10	12.12	14.14	16.16	20.19	24.23	28.26	32.20	36.34	40.37	44.41	48.45	52.49	56.53	60.56	64.60		
10	2.135	4.25	6.38	8.5	10.62	12.75	14.88	17.00	21.35	25.50	29.75	34.00	38.25	42.50	46.75	51.00	55.25	59.59	63.75	68.00		
11	2.338	4.676	7.02	9.34	11.68	14.03	16.36	18.70	23.38	28.05	32.72	37.40	42.08	46.76	51.42	56.10	60.78	65.45	70.12	74.80		
12	2.55	5.10	7.65	10.20	12.75	15.30	17.85	20.40	25.50	30.60	35.70	40.80	45.90	51.00	56.10	61.20	66.30	71.40	76.50	81.60		

WEIGHTS OF ROUND AND SQUARE IRON AND STEEL

Per Lineal Foot

Sizes	ROUND		SQUARE	
	Iron	Steel	Iron	Steel
$\frac{1}{4}$	.164	.17	.208	.21
$\frac{1}{8}$	.256	.26	.326	.33
$\frac{3}{8}$	.368	.38	.469	.48
$\frac{7}{16}$	.501	.51	.638	.65
$\frac{1}{2}$	.654	.67	.833	.85
$\frac{9}{16}$	.828	.85	1.055	1.08
$\frac{5}{8}$	1.023	1.04	1.302	1.33
$\frac{11}{16}$	1.237	1.27	1.576	1.61
$\frac{3}{4}$	1.473	1.50	1.875	1.92
$\frac{13}{16}$	1.728	1.76	2.201	2.24
$\frac{7}{8}$	2.004	2.04	2.552	2.60
$\frac{15}{16}$	2.301	2.35	2.930	3.06
1	2.618	2.65	3.333	3.40
$1\frac{1}{8}$	3.313	3.38	4.219	4.30
$1\frac{1}{4}$	4.091	4.17	5.208	5.31
$1\frac{3}{8}$	4.95	5.05	6.302	6.43
$1\frac{1}{2}$	5.89	6.01	7.500	7.65
$1\frac{5}{8}$	6.913	7.05	8.802	8.98
$1\frac{3}{4}$	8.018	8.18	10.21	10.40
$1\frac{7}{8}$	9.204	9.38	11.72	11.90
2	10.47	10.71	13.33	13.60
$2\frac{1}{8}$	11.82	12.05	15.05	15.40
$2\frac{3}{4}$	13.25	13.60	16.88	17.20
$2\frac{5}{8}$	14.77	15.10	18.80	19.20
$2\frac{1}{2}$	16.36	16.68	20.83	21.20
$2\frac{9}{16}$	18.04	18.39	22.97	23.50
$2\frac{3}{4}$	19.80	20.18	25.21	25.70
$2\frac{7}{8}$	21.64	22.06	27.55	28.20
3	23.56	24.10	30.00	30.60
$3\frac{1}{8}$	25.57	26.12	32.55	33.13
$3\frac{1}{4}$	27.65	28.30	35.21	35.96
$3\frac{3}{8}$	29.82	30.45	37.97	38.64
$3\frac{1}{2}$	32.07	32.70	40.83	41.60
$3\frac{5}{8}$	34.40	35.20	43.80	44.57
$3\frac{3}{4}$	36.82	37.54	46.88	47.80
4	41.89	42.72	53.33	54.40
$4\frac{1}{4}$	47.29	48.30	60.21	61.40
$4\frac{1}{2}$	53.01	54.60	67.50	68.90
$4\frac{3}{4}$	59.07	60.30	75.21	76.70
5	65.45	66.80	83.33	85.00
$5\frac{1}{4}$	72.16	73.60	91.88	93.70
$5\frac{1}{2}$	79.19	80.80	100.80	102.80
$5\frac{3}{4}$	86.56	88.30	110.20	112.40
6	94.25	96.10	120.00	122.40
$6\frac{1}{4}$	102.30	104.30	130.20	132.80
$6\frac{1}{2}$	110.60	112.80	140.80	143.60
7	128.30	130.90	163.30	166.60

WEIGHTS AND DIMENSIONS OF STANDARD CHANNELS

Depth of Channel	Weight Per Foot	Thickness of Web	Width of Flange
Inches	Pounds	Inches	Inches
3	4.00	.170	1.410
3	5.00	.264	1.504
3	6.00	.362	1.602
4	5.25	.180	1.580
4	6.25	.252	1.652
4	7.25	.325	1.725
5	6.50	.190	1.750
5	9.00	.330	1.890
5	11.50	.477	2.037
6	8.00	.200	1.920
6	10.50	.318	2.038
6	13.00	.440	2.160
6	15.50	.563	2.283
7	9.75	.210	2.090
7	12.25	.318	2.198
7	14.75	.423	2.303
7	17.25	.528	2.408
7	19.75	.633	2.513
8	11.25	.220	2.260
8	13.75	.307	2.347
8	16.25	.399	2.439
8	18.75	.490	2.530
8	21.25	.582	2.622
9	13.25	.230	2.430
9	15.00	.288	2.488
9	20.00	.452	2.652
9	25.00	.615	2.815
10	15.00	.240	2.600
10	20.00	.382	2.742
10	25.00	.529	2.889
10	30.00	.676	3.036
10	35.00	.823	3.183
12	20.50	.280	2.940
12	25.00	.390	3.050
12	30.00	.513	3.173
12	35.00	.636	3.296
12	40.00	.758	3.418
15	33.00	.400	3.400
15	35.00	.426	3.426
15	40.00	.524	3.524
15	45.00	.622	3.622
15	50.00	.720	3.720
15	55.00	.818	3.818

STEEL ANGLES

Weights and Dimensions of Standard Angles

EQUAL LEGS

Dimensions Inches	Thickness Inches	Wt. per Foot Lbs.	Area of Secti- on Sq. Ins.	Dimen- sions Inches	Thickness Inches	Wt. per Foot Lbs.	Area of Secti- on Sq. Ins.	Dimen- sions Inches	Thickness Inches	Wt. per Foot Lbs.	Area of Secti- on Sq. Ins.	
$\frac{1}{2} \times \frac{1}{2}$	No. $\frac{3}{2}$	.3	.....	$2\frac{1}{4} \times 2\frac{1}{4}$	$\frac{5}{16}$	4.5	1.31	4 x 4	$\frac{1}{2}$	12.8	3.75
$\frac{1}{2} \times \frac{1}{2}$	$\frac{7}{16}$	.4	.....	$2\frac{1}{4} \times 2\frac{1}{4}$	$\frac{3}{8}$	5.3	1.55	4 x 4	$\frac{9}{16}$	14.3	4.19
$\frac{5}{8} \times \frac{5}{8}$	$\frac{3}{2}$	.4	.....	$2\frac{1}{4} \times 2\frac{1}{4}$	$\frac{1}{16}$	6.1	1.78	4 x 4	$\frac{5}{8}$	15.7	4.62
$\frac{5}{8} \times \frac{5}{8}$	$\frac{1}{2}$	.5	.....	$2\frac{1}{4} \times 2\frac{1}{4}$	$\frac{1}{2}$	6.8	.....	4 x 4	$\frac{1}{16}$	17.1	5.03
$\frac{3}{4} \times \frac{3}{4}$	$\frac{3}{2}$	.5	.....	$2\frac{1}{2} \times 2\frac{1}{2}$	$\frac{1}{8}$	2.1	.....	4 x 4	$\frac{3}{4}$	18.5	5.44
$\frac{3}{4} \times \frac{3}{4}$	$\frac{1}{2}$	.6	.17	$2\frac{1}{2} \times 2\frac{1}{2}$	$\frac{1}{16}$	3.1	.91	4 x 4	$\frac{1}{16}$	19.9	5.84
$\frac{3}{4} \times \frac{3}{4}$	$\frac{7}{16}$	.9	.25	$2\frac{1}{2} \times 2\frac{1}{2}$	$\frac{1}{4}$	4.1	1.19	5 x 5	$\frac{3}{8}$	12.3	3.61
$\frac{7}{8} \times \frac{7}{8}$	$\frac{3}{2}$	.5	.....	$2\frac{1}{2} \times 2\frac{1}{2}$	$\frac{1}{16}$	5.0	1.47	5 x 5	$\frac{7}{16}$	14.3	4.19
$\frac{7}{8} \times \frac{7}{8}$	$\frac{1}{2}$	.7	.....	$2\frac{1}{2} \times 2\frac{1}{2}$	$\frac{3}{8}$	5.9	1.74	5 x 5	$\frac{1}{2}$	16.2	4.75
$\frac{7}{8} \times \frac{7}{8}$	$\frac{7}{16}$	1.0	.....	$2\frac{1}{2} \times 2\frac{1}{2}$	$\frac{1}{16}$	6.8	2.00	5 x 5	$\frac{9}{16}$	18.1	5.31
1 x 1	No. 13	.6	.....	$2\frac{1}{2} \times 2\frac{1}{2}$	$\frac{1}{2}$	7.7	2.25	5 x 5	$\frac{5}{8}$	20.0	5.86
1 x 1		.8	.24	$2\frac{3}{4} \times 2\frac{3}{4}$	$\frac{1}{8}$	2.3	.....	5 x 5	$\frac{1}{16}$	21.8	6.41
1 x 1		1.2	.34	$2\frac{3}{4} \times 2\frac{3}{4}$	$\frac{3}{16}$	3.4	1.00	5 x 5	$\frac{3}{4}$	23.6	.....
1 x 1		1.5	.44	$2\frac{3}{4} \times 2\frac{3}{4}$	$\frac{1}{4}$	4.5	1.32	5 x 5	$\frac{1}{8}$	25.4	.....
$\frac{1}{8} \times 1\frac{1}{8}$		.9	.....	$2\frac{3}{4} \times 2\frac{3}{4}$	$\frac{5}{16}$	5.6	1.63	5 x 5	$\frac{7}{8}$	27.2	.....
$\frac{1}{8} \times 1\frac{1}{8}$		$\frac{5}{8}$	1.3	$2\frac{3}{4} \times 2\frac{3}{4}$	$\frac{3}{8}$	6.6	1.93	5 x 5	$\frac{1}{16}$	28.9
$\frac{1}{4} \times 1\frac{1}{4}$		$\frac{1}{8}$	.30	$2\frac{3}{4} \times 2\frac{3}{4}$	$\frac{1}{16}$	7.6	2.22	5 x 5	1	30.6	.....
$\frac{1}{4} \times 1\frac{1}{4}$		1.5	.44	$2\frac{3}{4} \times 2\frac{3}{4}$	$\frac{1}{2}$	8.5	2.50	6 x 6	$\frac{3}{8}$	14.9	4.36	
$\frac{1}{4} \times 1\frac{1}{4}$		2.0	.57	3 x 3	$\frac{1}{8}$	2.5	.....	6 x 6	$\frac{7}{16}$	17.2	5.06
$\frac{1}{4} \times 1\frac{1}{4}$		2.4	.69	3 x 3	$\frac{1}{16}$	3.7	.....	6 x 6	$\frac{1}{2}$	19.6	5.75
$\frac{1}{2} \times 1\frac{1}{2}$		.92	.....	3 x 3	$\frac{1}{4}$	4.9	1.44	6 x 6	$\frac{9}{16}$	21.9	6.44
$\frac{1}{2} \times 1\frac{1}{2}$		$\frac{3}{2}$	1.3	35	3 x 3	$\frac{5}{16}$	6.1	1.78	6 x 6	$\frac{5}{8}$	24.2	7.11
$\frac{1}{2} \times 1\frac{1}{2}$		$\frac{7}{16}$	1.8	.53	3 x 3	$\frac{3}{8}$	7.2	2.11	6 x 6	$\frac{1}{16}$	26.5	7.78
$\frac{1}{2} \times 1\frac{1}{2}$		$\frac{1}{2}$	2.4	.69	3 x 3	$\frac{1}{16}$	8.3	2.44	6 x 6	$\frac{3}{4}$	28.7	8.44
$\frac{1}{2} \times 1\frac{1}{2}$		$\frac{7}{8}$	2.9	.84	3 x 3	$\frac{1}{2}$	9.4	2.75	6 x 6	$\frac{1}{8}$	31.0	9.09
$\frac{1}{2} \times 1\frac{1}{2}$		$\frac{3}{8}$	3.4	.99	3 x 3	$\frac{1}{16}$	10.4	3.06	6 x 6	$\frac{7}{8}$	33.1	9.74
$\frac{3}{4} \times 1\frac{3}{4}$		$\frac{1}{8}$	1.4	3 x 3	$\frac{5}{16}$	11.5	3.36	6 x 6	$\frac{1}{16}$	35.3	10.38
$\frac{3}{4} \times 1\frac{3}{4}$		2.2	.63	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{1}{4}$	5.8	.....	6 x 6	1	37.4	11.00
$\frac{3}{4} \times 1\frac{3}{4}$		$\frac{1}{4}$	.82	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{1}{16}$	7.2	2.09	8 x 8	$\frac{1}{2}$	26.4	7.75
$\frac{3}{4} \times 1\frac{3}{4}$		$\frac{5}{8}$	3.4	1.00	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{3}{8}$	8.5	2.49	8 x 8	$\frac{9}{16}$	29.6	8.69
$\frac{3}{4} \times 1\frac{3}{4}$		$\frac{3}{8}$	4.0	1.18	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{1}{16}$	9.8	2.88	8 x 8	$\frac{5}{8}$	32.7	9.61
$\frac{3}{4} \times 1\frac{3}{4}$		$\frac{7}{16}$	4.6	1.34	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{1}{2}$	11.1	3.25	8 x 8	$\frac{1}{16}$	35.8	10.53
2 x 2		$\frac{1}{8}$	1.7	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{1}{16}$	12.4	3.63	8 x 8	$\frac{3}{4}$	38.9	11.44
2 x 2		$\frac{3}{16}$	2.5	.72	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{5}{16}$	13.6	3.99	8 x 8	$\frac{1}{16}$	42.0	12.34
2 x 2		$\frac{1}{4}$	3.2	.94	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{1}{16}$	14.8	4.34	8 x 8	$\frac{7}{8}$	45.0	13.24
2 x 2		$\frac{7}{16}$	4.0	1.16	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{3}{4}$	16.0	4.69	8 x 8	$\frac{1}{16}$	48.1	14.13
2 x 2		$\frac{3}{8}$	4.7	1.36	$3\frac{1}{2} \times 3\frac{1}{2}$	$\frac{1}{16}$	17.1	5.03	8 x 8	1	51.0	15.00
2 x 2		$\frac{7}{16}$	5.3	1.56	4 x 4	$\frac{1}{4}$	6.6	8 x 8	$\frac{1}{16}$	54.0	15.88
$2\frac{1}{4} \times 2\frac{1}{4}$		$\frac{1}{2}$	1.9	4 x 4	$\frac{1}{16}$	8.2	2.41	8 x 8	$\frac{1}{8}$	56.9	16.74
$2\frac{1}{4} \times 2\frac{1}{4}$		$\frac{5}{8}$	2.8	.81	4 x 4	$\frac{3}{8}$	9.8	2.86	8 x 8	$1\frac{1}{4}$	62.7
$2\frac{1}{4} \times 2\frac{1}{4}$	$\frac{1}{4}$	3.7	1.07	4 x 4	$\frac{7}{16}$	11.3	3.31					

Standard Angles vary only by $\frac{1}{16}$ inch.

WEIGHTS AND DIMENSIONS OF REGULAR T-BARS

EQUAL LEGS

Size, Inches		Thickness of Metal Inches		Weight per Foot Lbs.
Flange	Stem	Flange	Stem	
5/8	5/8	1/8	1/8	0.5
3/4	3/4	1/8	1/8	0.6
7/8	7/8	1/8	1/8	0.7
1	1	1/8 to 5/32	1/8 to 5/32	1.0
1	1	3/16 to 3/32	3/16 to 3/32	1.3
1	1	1/4	1/4	1.5
1 1/8	1 1/8	1/8	1/8	1.0
1 1/8	1 1/8	3/16	3/16	1.3
1 1/4	1 1/4	1/8	1/8	1.0
1 1/4	1 1/4	3/16 to 7/32	3/16 to 7/32	1.7
1 1/4	1 1/4	1/4 to 3/32	1/4 to 3/32	2.1
1 1/2	1 1/2	3/16 to 7/32	3/16 to 7/32	2.0
1 1/2	1 1/2	1/4 to 3/32	1/4 to 3/32	2.6
1 3/4	1 3/4	3/16	3/16	2.1
1 3/4	1 3/4	1/4 to 5/16	1/4 to 5/16	3.2
2	2	1/4 to 5/16	1/4 to 5/16	3.7
2	2	5/16 to 3/8	5/16 to 3/8	4.4
2 1/4	2 1/4	1/4 to 5/16	1/4 to 5/16	4.2
2 1/4	2 1/4	5/16 to 3/8	5/16 to 3/8	5.0
2 1/2	2 1/2	5/16 to 3/8	5/16 to 3/8	5.6
2 1/2	2 1/2	3/8 to 7/16	3/8 to 7/16	6.5
3	3	5/16 to 3/8	5/16 to 3/8	6.8
3	3	3/8 to 7/16	3/8 to 7/16	7.9
3	3	7/16 to 1/2	7/16 to 1/2	9.0
3	3	1/2 to 9/16	1/2 to 9/16	10.1
3 1/2	3 1/2	3/8 to 7/16	3/8 to 7/16	9.3
3 1/2	3 1/2	1/2 to 7/16	1/2 to 7/16	11.9
4	4	3/8 to 7/16	3/8 to 7/16	10.9
4	4	1/2 to 7/16	1/2 to 7/16	13.9

WEIGHTS AND DIMENSIONS OF REGULAR T-BARS

UNEQUAL LEGS

Size, Inches		Thickness of Metal Inches		Weight per Foot Lbs.
Flange	Stem	Flange	Stem	
1 1/4	5/8	7/16	7/16 to 9/16	0.7
2	1 1/2	1/4 to 5/16	1/4 to 5/16	3.2
2 1/2	1 1/4	3/8 to 9/16	3/8 to 5/16	3.0
2 1/2	1 3/8	3/8 to 7/16	3/8 to 13/16	2.9
2 1/2	1 3/2	1/4 to 3/4	1/4 to 11/16	3.6
2 1/2	2 3/4	5/16 to 3/8	5/16 to 3/8	5.9
2 1/2	2 3/4	3/8 to 7/16	3/8 to 7/16	6.8
2 1/2	3	5/16 to 3/8	5/16 to 3/8	6.2
2 1/2	3	3/8 to 7/16	3/8 to 7/16	7.2
2 3/4	2	5/16 to 11/16	3/4	7.4
3	2 1/2	5/16 to 3/8	5/16 to 3/8	6.2
3	2 1/2	3/8 to 7/16	3/8 to 7/16	7.2
3	3 1/2	3/8 to 1/2	3/8 to 1/2	8.6
3	3 1/2	1/2 to 1/2	1/2 to 1/2	9.8
3	3 1/2	1/2 to 9/16	1/2 to 9/16	11.0
3	4	3/8 to 7/16	3/8 to 7/16	9.3
3	4	1/2 to 1/2	1/2 to 1/2	10.6
3	4	1/2 to 9/16	1/2 to 9/16	11.9
3 1/2	3	5/16 to 3/8	3/8 to 7/16	7.7
3 1/2	3	3/8 to 7/16	3/8 to 7/16	8.7
3 1/2	3	1/2 to 1/2	1/2 to 1/2	11.0
3 1/2	4	3/8 to 7/16	3/8 to 7/16	10.0
3 1/2	4	1/2 to 1/2	1/2 to 1/2	12.8
4	2	5/16 to 3/8	5/16 to 3/8	6.7
4	2	3/8 to 7/16	3/8 to 7/16	7.9
4	2 1/2	5/16 to 3/8	5/16 to 3/8	7.4
4	2 1/2	3/8 to 7/16	3/8 to 7/16	8.7
4	3	3/8 to 7/16	3/8 to 7/16	8.7
4	4 1/2	3/8 to 7/16	3/8 to 7/16	11.6
4	4 1/2	1/2 to 1/2	1/2 to 1/2	14.8
4	5	3/8 to 7/16	3/8 to 7/16	12.3
4	5	1/2 to 1/2	1/2 to 1/2	15.7
4 1/2	2 1/2	3/8 to 7/16	3/8 to 7/16	9.3
4 1/2	2 1/2	5/16 to 3/8	5/16 to 3/8	8.0
4 1/2	3	3/8 to 7/16	3/8 to 7/16	10.0
4 1/2	3	1/2 to 3/8	1/2 to 3/8	8.6
4 1/2	3 1/2	7/16 to 9/16	11/16 to 7/8	15.9
5	2 1/2	3/8 to 7/16	7/16 to 3/2	11.0
5	3	1/2 to 1/2	3/2 to 5/8	13.6

WEIGHT PER LINEAL FOOT OF HOOP AND BAND

Rolled to Birmingham (or Stubs) Gauge

No.	Width in Inches					No.	Width in Inches				
Gauge	½	⅝	¾	⅞	1	Gauge	1⅛	1¼	1⅓	1½	1⅝
	lbs.	lbs.	lbs.	lbs.	lbs.		lbs.	lbs.	lbs.	lbs.	lbs.
6	.3385	.4231	.5078	.5924	.6770	6	.762	.846	.931	1.016	1.100
8	.2864	.3581	.4296	.5013	.5729	8	.645	.716	.788	.859	.931
10	.2343	.2929	.3515	.4101	.4687	10	.527	.586	.645	.703	.762
12	.1822	.2278	.2734	.3190	.3645	11	.469	.521	.573	.725	.677
14	.1302	.1628	.1953	.2278	.2604	12	.410	.456	.501	.547	.592
16	.1041	.1302	.1562	.1822	.2083	13	.352	.391	.430	.469	.508
17	.0911	.1139	.1367	.1595	.1822	14	.293	.326	.358	.391	.423
18	.0781	.0976	.1171	.1367	.1562	15	.264	.293	.322	.352	.381
19	.0716	.0895	.1074	.1253	.1432	16	.234	.260	.286	.313	.339
20	.0651	.0814	.0976	.1139	.1302	17	.205	.229	.251	.273	.296
21	.0584	.0731	.0877	.1023	.1169	18	.176	.195	.215	.234	.254
22	.0521	.0651	.0781	.0911	.1041	19	.161	.179	.197	.215	....
23	.0469	.0588	.0705	.0822	.0939	20	.146	.163	.179	.195	....

FOR REFERENCE

Diameter multiplied by 3.1416 = circumference.

Circumference multiplied by .3183 = diameter.

Radius multiplied by 6.2831 = circumference.

Square of the diameter multiplied by .7854 = area.

Diameter multiplied by .8862 = side of equal square.

Area of a rectangle = length multiplied by breadth.

Doubling the diameter of a circle increases its area four times.

Side of a square multiplied by 1.128 = diameter of circle of equal area.

Surface of a sphere = square of diameter multiplied by 3.1416.

Area of triangle = base multiplied by $\frac{1}{2}$ the altitude.

Area of a sector of a circle = one-half the length of the arc multiplied by the radius of the circle.

One cubic foot of water weighs 62 $\frac{1}{2}$ pounds and contains 7 $\frac{1}{2}$ gallons.

One gallon of water (U. S. Standard) weighs 8 $\frac{1}{2}$ pounds.

To find the capacity (U. S. gallons) of cylindrical tanks, square the diameter expressed in inches, multiply by the length and by .0034.

To find the thickness of steel to be used in hollow cylinders under tension, such as pipe lines, etc.: multiply the specified working pressure in pounds by the radius of the cylinder in inches, then by the factor of safety, and divide the result obtained by the tensile strength of the steel, multiplied by the percentage efficiency of the riveted joint employed.

Boiler horse-power: The evaporation of 30 pounds of water per hour from a temperature of 100° F. into steam at 70 pounds gauge pressure.

One pound of water evaporated from and at 212° is equivalent to 965.7 British thermal units.

To find the number of square feet of heating surface in tubes: Multiply the number of tubes by the diameter of a tube in inches, by its length in feet, and by .2618.

To find the bursting and safe working pressure of a boiler shell: Multiply the tensile strength of material by the thickness of the plate. Then multiply the result so found by the efficiency of the joint and divide by the radius of the boiler. This will give the bursting pressure. The bursting pressure divided by the factor of safety will give the safe working pressure. The factor of safety of 5 has been generally accepted by eminent engineers and boiler-makers.

CIRCUMFERENCES AND AREAS OF CIRCLES

OF ONE INCH

INCHES OR FEET

Fract.	Dec.	Circ.	Area	Dia.	Circ.	Area	Dia.	Circ.	Area
$\frac{1}{4}$	.015625	.04909	.00019	1	3.1416	.7854	64	201.06	3216.99
$\frac{3}{16}$	.03125	.09818	.00077	2	6.2832	3.1416	65	204.20	3318.31
$\frac{5}{16}$	.046875	.14726	.00173	3	9.4248	7.0686	66	207.34	3421.19
$\frac{7}{16}$	.078125	.24545	.00479	5	12.5664	12.5664	67	210.49	3525.65
$\frac{9}{16}$	.09375	.29452	.00690	6	15.7080	19.635	68	213.63	3631.68
$\frac{11}{16}$	.109375	.34363	.00939	7	18.850	28.274	69	216.77	3739.28
$\frac{13}{16}$	.125	.39270	.01227	8	21.991	38.485	70	219.91	3848.45
$\frac{15}{16}$	.140625	.44181	.01553	9	25.133	50.266	71	223.05	3959.19
$\frac{1}{2}$	.15625	.49087	.01917	10	28.274	63.617	72	226.19	4071.50
$\frac{17}{32}$	.171875	.53999	.02320	11	31.416	78.540	73	229.34	4185.39
$\frac{19}{32}$	.1875	.58905	.02761	12	34.558	95.033	74	232.48	4300.84
$\frac{21}{32}$	.203125	.63817	.03241	13	37.699	113.1	75	235.62	4417.86
$\frac{23}{32}$	.21875	.68722	.03758	14	43.982	153.94	77	241.90	4656.63
$\frac{25}{32}$	.234375	.73635	.04314	15	47.124	176.71	78	245.04	4778.36
$\frac{1}{4}$	.25	.78540	.04909	16	50.265	201.06	79	248.19	4901.67
$\frac{27}{32}$	.265625	.83453	.05542	17	53.407	226.98	80	251.33	5026.55
$\frac{29}{32}$	.28125	.88357	.06213	18	56.549	254.47	81	254.47	5153.
$\frac{31}{32}$	.296875	.93271	.06922	19	59.690	283.53	82	257.61	5281.02
$\frac{33}{32}$	.3125	.98175	.07670	20	62.832	314.16	83	260.75	5410.61
$\frac{35}{32}$	.328125	1.0309	.08456	21	65.973	346.36	84	263.89	5541.77
$\frac{37}{32}$	.34375	1.0799	.09281	22	69.115	380.13	85	267.04	5674.50
$\frac{39}{32}$	.359375	1.1291	.10144	23	72.257	415.48	86	270.18	5808.80
$\frac{41}{32}$	.375	1.1781	.11045	24	75.398	452.39	87	273.32	5944.68
$\frac{43}{32}$	.390625	1.2273	.11984	25	78.540	490.87	88	276.46	6082.12
$\frac{45}{32}$	.40625	1.2763	.12962	26	81.681	530.93	89	279.60	6221.14
$\frac{47}{32}$	.421875	1.3254	.13979	27	84.823	572.56	90	282.74	6361.73
$\frac{49}{32}$	.4375	1.3744	.15033	28	87.965	615.75	91	285.88	6503.88
$\frac{51}{32}$	.453125	1.4236	.16126	29	91.106	660.52	92	289.03	6647.61
$\frac{53}{32}$	.46875	1.4726	.17257	30	94.248	706.86	93	292.17	6792.91
$\frac{55}{32}$	.484375	1.5218	.18427	31	97.389	754.77	94	295.31	6939.78
$\frac{1}{2}$	.5	1.5708	.19635	32	100.53	804.25	95	298.45	7088.22
$\frac{57}{32}$	.515625	1.6199	.20880	33	103.67	855.30	96	301.59	7238.23
$\frac{59}{32}$	.53125	1.6690	.22166	34	106.81	907.92	97	304.73	7339.81
$\frac{61}{32}$	.546875	1.7181	.23489	35	109.96	962.11	98	307.88	7542.96
$\frac{63}{32}$	.5625	1.7671	.24850	36	113.10	1017.88	99	311.02	7697.69
$\frac{65}{32}$	.578125	1.8163	.26248	37	116.24	1075.21	100	314.16	7853.98
$\frac{67}{32}$	.59375	1.8653	.27688	38	119.38	1134.11	101	317.30	8011.85
$\frac{69}{32}$	.609375	1.9145	.29164	39	122.52	1194.59	102	320.44	8171.28
$\frac{71}{32}$	.625	1.9635	.30680	40	125.66	1256.64	103	323.58	8332.29
$\frac{73}{32}$	.640625	2.0127	.32232	41	128.81	1320.25	104	326.73	8494.87
$\frac{75}{32}$	.65625	2.0617	.33824	42	131.95	1385.44	105	329.87	8659.01
$\frac{77}{32}$	.671875	2.1108	.35453	43	135.09	1452.20	106	333.01	8824.73
$\frac{79}{32}$	.6875	2.1598	.37122	44	138.23	1520.53	107	336.15	8992.02
$\frac{81}{32}$	.703125	2.2090	.38828	45	141.37	1590.43	108	339.29	9160.88
$\frac{83}{32}$	.71875	2.2580	.40574	46	144.51	1661.90	109	342.43	9331.32
$\frac{85}{32}$	.734375	2.3072	.42356	47	147.65	1734.94	110	345.58	9503.32
$\frac{87}{32}$	.75	2.3562	.44179	48	150.80	1809.56	111	348.72	9676.89
$\frac{89}{32}$	.765625	2.4054	.45253	49	153.94	1885.74	112	351.86	9852.03
$\frac{91}{32}$	.78125	2.4544	.47937	50	157.08	1963.50	113	355.	10028.75
$\frac{93}{32}$	.796875	2.5036	.49872	51	160.22	2042.82	114	358.14	10207.03
$\frac{95}{32}$	.8125	2.5525	.51849	52	163.36	2123.72	115	361.28	10386.89
$\frac{97}{32}$	.828125	2.6017	.53862	53	166.50	2206.18	116	364.42	10568.32
$\frac{99}{32}$	.84375	2.6507	.55914	54	169.65	2290.22	117	367.57	10751.32
$\frac{101}{32}$	.859375	2.6999	.58003	55	172.79	2375.83	118	370.71	10935.88
$\frac{103}{32}$	.875	2.7489	.60132	56	175.93	2463.01	119	373.85	11122.02
$\frac{105}{32}$	.890625	2.7981	.62298	57	179.07	2551.76	120	376.99	11309.73
$\frac{107}{32}$	.90625	2.8471	.64504	58	182.21	2642.08	121	380.13	11499.01
$\frac{109}{32}$	.9375	2.9452	.69029	60	185.35	2733.97	122	383.27	11689.87
$\frac{111}{32}$	.953125	2.9945	.71349	61	188.50	2827.43	123	386.42	11882.29
$\frac{113}{32}$	.96875	3.0434	.73708	62	191.64	2922.47	124	389.56	12076.28
$\frac{115}{32}$	.984375	3.0928	.76097	63	194.78	3019.07	125	392.70	12271.85
					197.92	3117.25	126	395.84	12468.98

U. S. GALLONS IN ROUND TANKS

For One Foot in Depth.

Diam. of Tanks	No. U.S.Gals.	Cubic Ft. and Area in Sq. Ft	Diam. of Tanks	No. U.S.Gals.	Cubic Ft. and Area in Sq. Ft.	Diam. of Tanks	No. U.S.Gals.	Cubic Ft. and Area in Sq. Ft.
1 ft.	5.87	.785	5 ft. 8 in.	188.66	25.22	19 ft.	2120.90	283.53
1 ft. 1 in.	6.89	.922	5 ft. 9 in.	194.25	25.97	19 ft. 3 in.	2177.10	291.04
1 ft. 2 in.	8.	1.069	5 ft. 10 in.	199.92	26.73	19 ft. 6 in.	2234.	298.65
1 ft. 3 in.	9.18	1.227	5 ft. 11 in.	205.67	27.49	19 ft. 9 in.	2291.70	306.35
1 ft. 4 in.	10.44	1.396	6 ft.	211.51	28.27	20 ft.	2350.10	314.16
1 ft. 5 in.	11.79	1.576	6 ft. 3 in.	229.50	30.68	20 ft. 3 in.	2409.20	322.06
1 ft. 6 in.	13.22	1.767	6 ft. 6 in.	248.23	33.18	20 ft. 6 in.	2469.10	330.06
1 ft. 7 in.	14.73	1.969	6 ft. 9 in.	267.69	35.78	20 ft. 9 in.	2529.60	338.16
1 ft. 8 in.	16.32	2.182	7 ft.	287.88	38.48	21 ft.	2591.	346.36
1 ft. 9 in.	17.99	2.405	7 ft. 3 in.	308.81	41.28	21 ft. 3 in.	2653.	354.66
1 ft. 10 in.	19.75	2.640	7 ft. 6 in.	330.48	44.18	21 ft. 6 in.	2715.80	363.05
1 ft. 11 in.	21.58	2.885	7 ft. 9 in.	352.88	47.17	21 ft. 9 in.	2779.30	371.54
2 ft.	23.50	3.142	8 ft.	376.01	50.27	22 ft.	2843.60	380.13
2 ft. 1 in.	25.50	3.409	8 ft. 3 in.	399.88	53.46	22 ft. 3 in.	2908.60	388.82
2 ft. 2 in.	27.58	3.687	8 ft. 6 in.	424.48	56.75	22 ft. 6 in.	2974.30	397.61
2 ft. 3 in.	29.74	3.976	8 ft. 9 in.	449.82	60.13	22 ft. 9 in.	3040.80	406.49
2 ft. 4 in.	31.99	4.276	9 ft.	475.89	63.62	23 ft.	3108.	415.48
2 ft. 5 in.	34.31	4.587	9 ft. 3 in.	502.70	67.20	23 ft. 3 in.	3175.90	424.56
2 ft. 6 in.	36.72	4.909	9 ft. 6 in.	530.24	70.88	23 ft. 6 in.	3244.60	433.74
2 ft. 7 in.	39.21	5.241	9 ft. 9 in.	558.51	74.66	23 ft. 9 in.	3314.	443.01
2 ft. 8 in.	41.78	5.585	10 ft.	587.52	78.54	24 ft.	3384.10	452.39
2 ft. 9 in.	44.43	5.940	10 ft. 3 in.	617.26	82.52	24 ft. 3 in.	3455.	461.86
2 ft. 10 in.	47.16	6.305	10 ft. 6 in.	640.74	86.59	24 ft. 6 in.	3526.60	471.44
2 ft. 11 in.	49.98	6.681	10 ft. 9 in.	678.95	90.76	24 ft. 9 in.	3598.90	481.11
3 ft.	52.88	7.069	11 ft.	710.90	95.03	25 ft.	3672.	490.87
3 ft. 1 in.	55.86	7.467	11 ft. 3 in.	743.58	99.40	25 ft. 3 in.	3745.80	500.74
3 ft. 2 in.	58.92	7.876	11 ft. 6 in.	776.99	103.87	25 ft. 6 in.	3820.30	510.71
3 ft. 3 in.	62.06	8.296	11 ft. 9 in.	811.14	108.43	25 ft. 9 in.	3895.60	520.77
3 ft. 4 in.	65.28	8.727	12 ft.	846.03	113.10	26 ft.	3971.60	530.93
3 ft. 5 in.	68.58	9.168	12 ft. 3 in.	881.65	117.86	26 ft. 3 in.	4048.40	541.19
3 ft. 6 in.	71.97	9.621	12 ft. 6 in.	918.	122.72	26 ft. 6 in.	4125.90	551.55
3 ft. 7 in.	75.44	10.085	12 ft. 9 in.	955.09	127.68	26 ft. 9 in.	4204.10	562.
3 ft. 8 in.	78.99	10.559	13 ft.	992.91	132.73	27 ft.	4283.	572.66
3 ft. 9 in.	82.62	11.045	13 ft. 3 in.	1031.50	137.89	27 ft. 3 in.	4362.70	583.21
3 ft. 10 in.	86.33	11.541	13 ft. 6 in.	1070.80	143.14	27 ft. 6 in.	4443.10	593.96
3 ft. 11 in.	90.13	12.048	13 ft. 9 in.	1110.80	148.49	27 ft. 9 in.	4524.30	604.81
4 ft.	94.	12.566	14 ft.	1151.50	153.94	28 ft.	4606.20	615.75
4 ft. 1 in.	97.96	13.095	14 ft. 3 in.	1193.	159.48	28 ft. 3 in.	4688.80	626.80
4 ft. 2 in.	102.	13.635	14 ft. 6 in.	1235.30	165.13	28 ft. 6 in.	4772.10	637.94
4 ft. 3 in.	106.12	14.186	14 ft. 9 in.	1278.20	170.87	28 ft. 9 in.	4856.20	649.18
4 ft. 4 in.	110.32	14.748	15 ft.	1321.90	176.71	29 ft.	4941.	660.52
4 ft. 5 in.	114.61	15.321	15 ft. 3 in.	1366.40	182.65	29 ft. 3 in.	5026.60	671.96
4 ft. 6 in.	118.97	15.90	15 ft. 6 in.	1411.50	188.69	29 ft. 6 in.	5112.90	683.49
4 ft. 7 in.	123.42	16.50	15 ft. 9 in.	1457.40	194.83	29 ft. 9 in.	5199.90	695.13
4 ft. 8 in.	127.95	17.10	16 ft.	1504.10	201.06	30 ft.	5287.70	706.86
4 ft. 9 in.	132.56	17.72	16 ft. 3 in.	1551.40	207.39	30 ft. 3 in.	5376.20	718.69
4 ft. 10 in.	137.25	18.35	16 ft. 6 in.	1599.50	213.82	30 ft. 6 in.	5465.40	730.62
4 ft. 11 in.	142.02	18.99	16 ft. 9 in.	1648.40	220.35	30 ft. 9 in.	5555.40	742.64
5 ft.	146.88	19.63	17 ft.	1697.90	226.98	31 ft.	5646.10	754.77
5 ft. 1 in.	151.82	20.29	17 ft. 3 in.	1748.20	233.71	31 ft. 3 in.	5737.50	766.99
5 ft. 2 in.	156.83	20.97	17 ft. 6 in.	1799.30	240.53	31 ft. 6 in.	5829.70	779.31
5 ft. 3 in.	161.93	21.65	17 ft. 9 in.	1851.10	247.45	31 ft. 9 in.	5922.60	791.73
5 ft. 4 in.	167.12	22.34	18 ft.	1903.60	254.47	32 ft.	6016.20	804.25
5 ft. 5 in.	172.38	23.04	18 ft. 3 in.	1956.80	261.59	32 ft. 3 in.	6110.60	816.86
5 ft. 6 in.	177.72	23.76	18 ft. 6 in.	2010.80	268.80	32 ft. 6 in.	6205.70	829.58
5 ft. 7 in.	183.15	24.48	18 ft. 9 in.	2065.50	276.12	32 ft. 9 in.	6301.50	842.39

31½ gallons equals 1 barrel.

To find the capacity of tanks greater than the largest given in the table, look in the table for a tank of one-half of the given size and multiply its capacity by 4, or one of one-third its size and multiply its capacity by 9, etc.

NUMBER OF U. S. GALLONS IN RECTANGULAR TANKS
For One Foot in Depth

Width of Tank	Length of Tank																													
	ft. 2	ft. 2	in. 6	ft. 3	ft. 3	in. 6	ft. 4	ft. 4	in. 6	ft. 5	ft. 5	in. 6	ft. 6	ft. 6	in. 6	ft. 7	ft. 7	in. 6	ft. 8	ft. 8	in. 6	ft. 9	ft. 9	in. 6	ft. 10	ft. 10	in. 6	ft. 11	ft. 11	in. 6	ft. 12
2 ft. 6 in.	29.92	37.40	44.88	52.36	59.84	67.32	74.81	82.29	89.77	97.25	104.73	112.21	119.69	127.17	134.65	142.13	149.61	157.09	164.57	172.05	179.53	187.01	196.36	205.71	215.06	224.41				
3 ft. 6 in.	46.75	56.10	65.45	74.80	84.16	93.51	102.86	112.21	121.56	130.91	140.26	149.61	158.96	168.31	177.66	187.01	196.36	205.71	215.06	224.41	235.63	246.86	258.07	269.30	274.90	288.00	301.09	314.18		
4 ft. 6 in.	67.32	78.54	89.77	100.99	112.21	123.43	134.65	145.87	157.09	168.31	179.53	190.75	202.97	213.19	224.41	235.63	245.82	255.63	268.73	271.82	274.90	288.00	297.22	314.18	329.14	344.10	359.06			
5 ft. 6 in.	91.64	104.73	117.82	130.91	144.00	157.09	170.18	183.27	196.36	209.45	222.54	235.63	248.73	261.82	274.90	288.00	297.22	314.18	329.14	344.10	359.06	370.28	387.11	403.94	420.13	448.83				
6 ft. 6 in.	119.69	134.65	149.61	164.57	179.53	194.49	209.45	224.41	239.37	254.34	269.39	284.26	299.22	314.18	329.14	344.10	359.06	370.28	387.11	403.94	420.13	448.83	473.14	493.71	516.15	538.59				
7 ft. 6 in.	151.48	168.31	185.14	201.97	218.80	235.63	252.47	269.39	286.13	302.96	319.79	336.62	353.45	370.28	387.11	403.94	420.13	448.83	473.14	493.71	516.15	538.59	559.16	583.47	602.18	628.36				
8 ft. 6 in.	187.01	205.71	224.41	243.11	261.82	280.52	299.22	317.92	336.62	355.32	374.03	392.72	411.43	430.13	448.83	473.14	493.71	516.15	538.59	559.16	583.47	602.18	628.36	651.19	673.24					
9 ft. 6 in.	226.28	246.86	267.43	288.00	308.57	329.14	349.71	370.28	390.85	411.43	432.00	452.57	473.14	493.71	516.15	538.59	559.16	583.47	602.18	628.36	651.19	673.24	698.20	718.12	731.21	763.00				
10 ft. 6 in.	269.30	291.74	314.18	336.62	359.06	381.50	403.94	426.39	448.83	471.27	493.71	516.15	538.59	559.16	583.47	602.18	628.36	651.19	673.24	698.20	718.12	731.21	763.00	780.79	807.89	824.73	840.00	860.26	887.66	
11 ft. 6 in.	316.05	340.36	364.67	388.98	413.30	437.60	461.92	486.23	510.54	534.85	559.16	583.47	602.18	628.36	651.19	673.24	698.20	718.12	731.21	763.00	780.79	807.89	824.73	840.00	860.26	887.66				
12 ft.	366.54	392.72	418.91	445.09	471.27	497.45	523.64	549.81	575.99	602.18	628.36	651.19	673.24	698.20	718.12	731.21	763.00	780.79	807.89	824.73	840.00	860.26	887.66	903.26	942.56	987.43				

AREAS OF CIRCLES FROM 1-32 INCH UP TO 10 INCHES IN DIAMETER, ADVANCING BY THIRTY-SECONDS OF AN INCH

	0 Inch	1 Inch	2 Inch	3 Inch	4 Inch	5 Inch	6 Inch	7 Inch	8 Inch	9 Inch	
0	.....	.7854	3.1416	7.068	12.56	19.63	28.27	38.48	50.26	63.62	0
$\frac{1}{32}$	.000767	.8352	3.240	7.216	12.76	19.88	28.57	38.83	50.66	64.06	$\frac{1}{32}$
$\frac{1}{16}$	.00306	.8866	3.341	7.366	12.96	20.13	28.87	39.17	51.05	64.50	$\frac{1}{16}$
$\frac{3}{32}$	.0069	.9395	3.443	7.516	13.16	20.38	29.16	39.52	51.45	64.95	$\frac{3}{32}$
$\frac{1}{8}$	.0123	.9940	3.546	7.669	13.36	20.63	29.46	39.87	51.85	65.40	$\frac{1}{8}$
$\frac{5}{32}$	.0192	1.050	3.651	7.824	13.57	20.88	29.77	40.22	52.25	65.84	$\frac{5}{32}$
$\frac{3}{16}$	.0276	1.107	3.758	7.979	13.77	21.13	30.07	40.57	52.65	66.30	$\frac{3}{16}$
$\frac{7}{32}$	.0376	1.166	3.866	8.137	13.98	21.39	30.37	40.93	53.05	66.75	$\frac{7}{32}$
$\frac{1}{4}$	.0491	1.227	3.976	8.295	14.19	21.65	30.68	41.28	53.46	67.20	$\frac{1}{4}$
$\frac{9}{32}$	.0621	1.289	4.087	8.456	14.40	21.91	30.99	41.64	53.86	67.65	$\frac{9}{32}$
$\frac{5}{16}$	.0767	1.353	4.199	8.618	14.61	22.17	31.30	42.00	54.27	68.11	$\frac{5}{16}$
$\frac{11}{32}$	.0928	1.418	4.314	8.781	14.82	22.43	31.61	42.36	54.68	68.57	$\frac{11}{32}$
$\frac{3}{8}$	.1104	1.484	4.430	8.946	15.03	22.69	31.92	42.72	55.09	69.03	$\frac{3}{8}$
$\frac{13}{32}$	.1296	1.553	4.547	9.112	15.25	22.95	32.23	43.08	55.50	69.49	$\frac{13}{32}$
$\frac{7}{16}$	.1503	1.623	4.666	9.280	15.47	23.22	32.55	43.45	55.91	69.95	$\frac{7}{16}$
$\frac{15}{32}$	.1725	1.694	4.786	9.450	15.68	23.49	32.86	43.81	56.33	70.42	$\frac{15}{32}$
$\frac{1}{2}$	.1963	1.767	4.908	9.621	15.90	23.76	33.18	44.18	56.74	70.88	$\frac{1}{2}$
$\frac{17}{32}$	.2216	1.840	5.032	9.794	16.13	24.03	33.50	44.55	57.16	71.35	$\frac{17}{32}$
$\frac{9}{16}$	.2485	1.917	5.157	9.968	16.35	24.30	33.82	44.92	57.58	71.82	$\frac{9}{16}$
$\frac{19}{32}$	.2770	1.994	5.283	10.14	16.57	24.58	34.15	45.29	58.00	72.29	$\frac{19}{32}$
$\frac{5}{8}$	.3067	2.073	5.411	10.32	16.80	24.85	34.47	45.66	58.43	72.76	$\frac{5}{8}$
$\frac{21}{32}$	.3382	2.154	5.541	10.50	17.03	25.13	34.80	46.04	58.85	73.23	$\frac{21}{32}$
$\frac{11}{16}$	.3712	2.236	5.672	10.68	17.26	25.41	35.12	46.41	59.28	73.71	$\frac{11}{16}$
$\frac{23}{32}$	.4057	2.319	5.805	10.86	17.49	25.68	35.45	46.79	59.70	74.18	$\frac{23}{32}$
$\frac{3}{4}$	.4417	2.405	5.939	11.04	17.72	25.97	35.78	47.17	60.13	74.66	$\frac{3}{4}$
$\frac{25}{32}$	.4793	2.492	6.075	11.23	17.95	26.25	36.11	47.55	60.56	75.14	$\frac{25}{32}$
$\frac{13}{16}$	.5184	2.580	6.212	11.41	18.19	26.53	36.45	47.94	60.99	75.62	$\frac{13}{16}$
$\frac{27}{32}$	.5591	2.669	6.351	11.60	18.43	26.82	36.79	48.32	61.24	76.10	$\frac{27}{32}$
$\frac{7}{8}$	.6013	2.761	6.491	11.79	18.66	27.11	37.12	48.71	61.86	76.59	$\frac{7}{8}$
$\frac{29}{32}$	.6450	2.854	6.633	11.98	18.91	27.40	37.46	49.09	62.30	77.07	$\frac{29}{32}$
$\frac{15}{16}$	.6903	2.948	6.777	12.18	19.15	27.69	37.80	49.48	62.74	77.56	$\frac{15}{16}$
$\frac{31}{32}$	.7370	3.044	6.922	12.37	19.39	27.98	38.14	49.87	63.18	78.05	$\frac{31}{32}$

DECIMALS OF A FOOT FOR EACH 32ND OF AN INCH

WEIGHT AND SPECIFIC GRAVITY OF METALS

	Weight Per Cu. Ft. Lbs.	Weight Per Cu. In. Lbs.	Specific Gravity
Aluminum	163	.094	2.583
Antimony, Cast	419	.242	6.72
Bismuth	611	.353	9.822
Brass	524	.300	8.40
Bronze	534	.300	8.561
Copper, Cast	537	.310	8.607
Copper, Wire	555	.320	8.9
Gold, 24 Carat	1208	.697	19.361
Gold, Standard	1106	.638	17.724
Gun Metal	528	.304	8.459
Iron, Cast	450	.260	7.21
Iron, Wrought	485	.280	7.78
Lead, Cast	708	.410	11.36
Lead, Rolled	711	.411	11.41
Mercury	849	.492	13.596
Platinum	1344	.778	21.531
Platinum, Sheet	1436	.832	23.000
Silver, Pure	654	.379	10.474
Silver, Standard	644	.372	10.312
Steel	490	.284	7.85
Tin, Cast	455	.263	7.291
Zinc	437	.252	7.1

METALS—WEIGHT PER SQUARE FOOT IN POUNDS

Thickness, Inches

	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Wrought Iron	2.53	5.05	10.10	15.16	20.21	25.27	30.31	35.37	40.42
Cast Iron	2.34	4.69	9.38	14.06	18.75	23.44	28.13	32.81	37.50
Steel	2.55	5.10	10.21	15.31	20.42	25.52	30.63	35.73	40.83
Copper	2.89	5.78	11.56	17.34	23.13	28.91	34.69	40.47	46.25
Brass	2.73	5.47	10.94	16.41	21.88	27.34	32.81	38.28	43.75
Lead	3.71	7.42	14.83	22.25	29.67	37.08	44.50	51.92	59.33
Zinc	2.34	4.69	9.38	14.06	18.75	23.44	28.13	32.81	37.50

MELTING POINTS OF METALS

		Centigrade Degrees	Fahrenheit Degrees
Aluminum		625	1157
Antimony		621	1170
Barium Chloride		891	1635
Bismuth		267	513
Brass		1021	1870
Bromide	Minus	7	19.4
Cadmium		322	611
Calcium		790	1436
Copper		1085	1985
Gallium		30	86
Glass		1309	2377
Gold		1038	1900
Iodine		103	237
Iridium		1950	3542
Iron, pure		1600	2912
Iron, cast		1221	2230
Iron, wrought		1500	2732
Lead		326	619
Magnesium		861	1382
Mercury	Minus	40	40
Nickel		1450	2642
Palladium		1500	2732
Phosphorus		44	111
Platinum		1832	3327
Potassium		58	136
Potassium Chloride		718	1325
Selenium		125	257
Silicon		1430	2606
Silver		962	1764
Sodium		96	206
Sodium Chloride		800	1472
Steel		1371	2500
Sulphur		114	237
Tellurium		444	851
Thallium		290	554
Tin		229	445
Zinc		420	788

To get degrees Centigrade, subtract 32 from degrees Fahrenheit, multiply by 5, and divide by 9. To get degrees Fahrenheit, multiply degrees Centigrade by 9, divide by 5, and add 32.

Section 3

Roofing —— Gutter —— Conductor and Accessories

Roll Roofing, Corrugated Roofing, Crimp Roofing,
Brick Siding, Etc.

Gutter and Conductor
O. G. and Flat Back Gutters
Ridge Roll and Cornices
Finials and Conductor Heads
Gutter Hangers and Conductor Hooks
Ventilators and Sky Lights



ROLL ROOFING DEPARTMENT

This is a department of our business that receives exceptional care in the manufacturing.

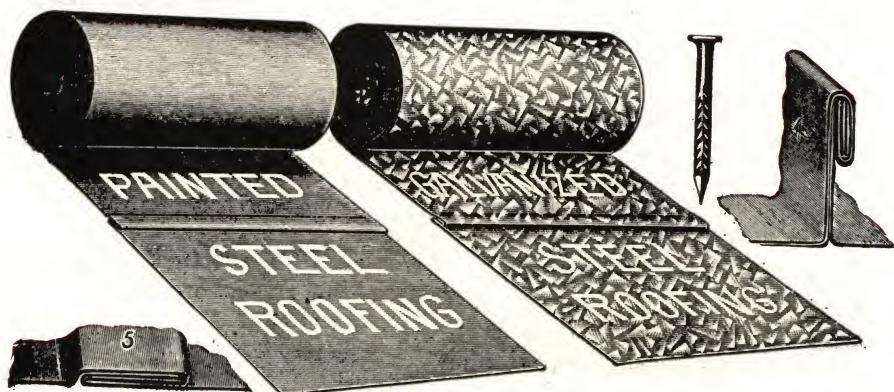
Sheets are all re-squared and all corners notched, then locked together with a double cross lock, wound into a roll, and tied, with a wooden strip protecting the outside edge—all done by machinery—a special machine of our own design.

The seam is absolutely perfect in its exactness. Every edge and seam is square and true, not a variance of a fraction of an inch to cause the roofer trouble in laying it.

In fact these seams are a striking demonstration of the greater uniformity of our exact machine work as compared with the uncertain results formerly attained.

An advantage that appeals to the roofer who has had trouble with the old kind.

SELF-CAPPING ROLL ROOFING



Made of Steel, Charcoal Iron and Toncan Metal

This seam is so constructed that a double fold is made the entire length of the seam, making it absolutely water-tight.

The following illustration shows how the cleats are used to fasten self Cap Roll Roofing to the sheathing.

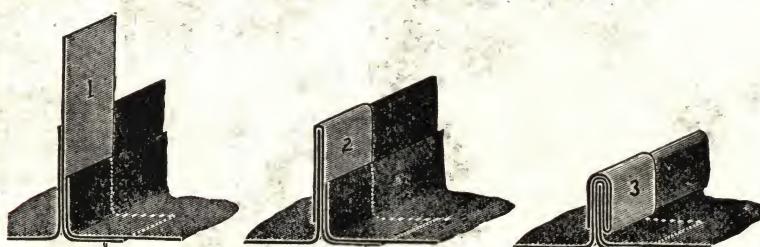


Fig. 1—Cleat in position and nailed to sheathing.

Fig. 2—Cleat turned down over the 1 3/4-inch turned up edge.

Fig. 3—Shows the 1 3/4-inch edge and the cleat folded over the 1-inch turned up edge.

A square consists of a strip 50 feet long, having a covering width of 2 feet; or a 50-foot length will finish 100 square feet on building. Cleats furnished only when ordered.

Tools Necessary for Applying

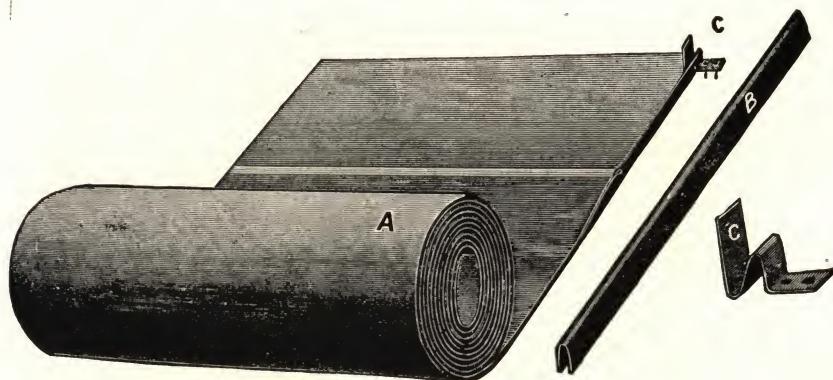
One pair 1-inch foot seamers, one pair 1-inch roofing tongs, one pair 1 3/4-inch roofing tongs.

Charge for tools will be credited when tools are returned in good order, freight prepaid.

Tools sent only when ordered.

Always mark on shipping card by whom returned, to insure proper credit.

ROLL AND CAP ROOFING



Made from painted or galvanized sheets, full width 26½ inches. Put up in rolls of 50 lineal feet each, making a covering surface of 100 sq. ft. to the roll. Unless otherwise specified, we always send caps and cleats with this material. Our roll roofing is all double cross lock.

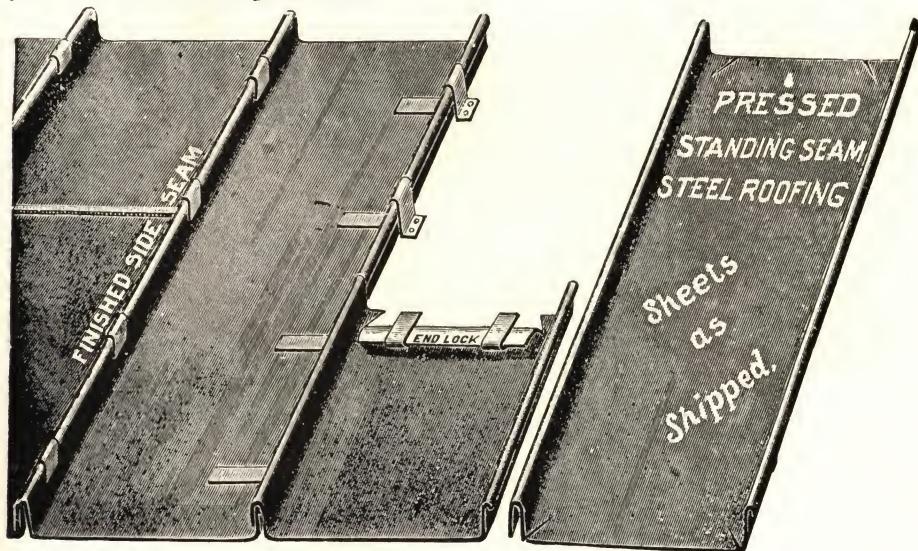
Tools for applying, 1-inch tongs and cap squeezers.

Tools sent only when ordered.

PRESSED STANDING SEAM ROOFING

Made of Steel

These sheets are formed with a cap on each side, making a better, stronger roof than when separate caps are used.



"A" represents sheets as shipped. "B" explains method of application and "C" shows finished seam.

RULES OF MEASUREMENT

IN SELLING SHEET METAL BUILDING MATERIAL

All Iron and Steel Roofing, Siding, Ceiling, etc., except galvanized material, is painted both sides, unless otherwise ordered.

All Iron and Steel Roofing, Siding and Ceiling, are sold by the square (100 square feet), except Corrugated Iron, which is sold by the square or pound, as preferred.

A square consists of 100 square feet, and is calculated by the following rules of measurement:

Corrugated Iron or Steel and Imitation Brick.—The full width and length of sheets, after being corrugated or formed, is calculated.

V Crimped, Beaded, Weather Boards Iron or Steel—The full length of sheets, together with the actual covering width, is calculated.

Standing Seam Steel Roofing.—The actual covering width and full length is calculated, whether the sheets are connected by end locks and shipped in rolls, or separate and shipped in crates.

Wide Gutters and Valleys.—The full width and length of material is calculated.

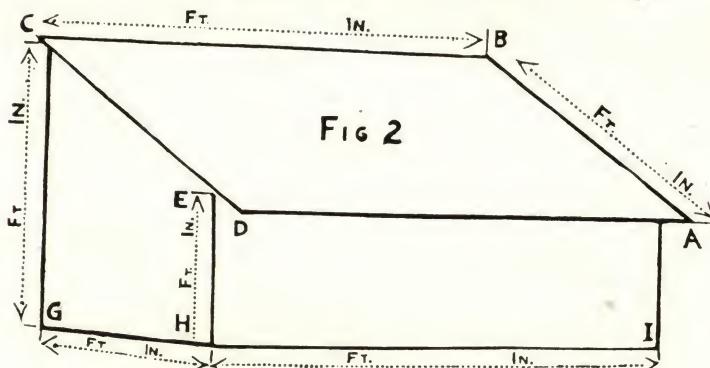
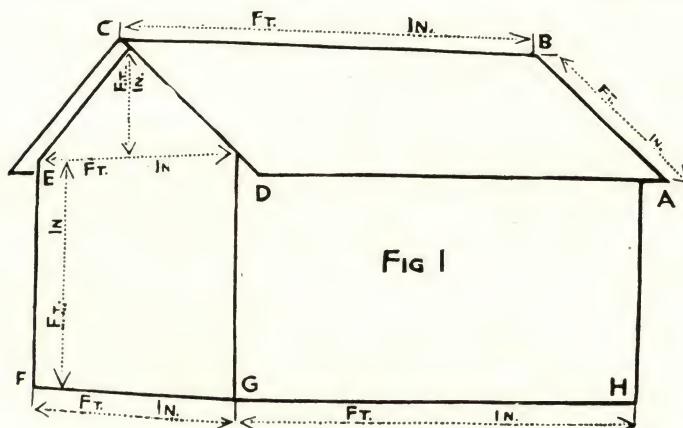
Nails, Wood Strips, Dry Paint and Ready Mixed Paints, are sold by the pound, gallon or square (the amount generally required in applying a square). They are not included in the price quoted on the sheet iron or steel, but are charged as separate items when furnished.

Ridge Roll, Ridge Cap, Corrugated Wood Strips, Corner Boards, Panel Strips, Window and Door Case Coverings, Mouldings, Stylings, Eaves Trough, Conductor Pipes, etc., are sold by the lineal foot, and not included in prices quoted on Sheet Iron and Steel, but when furnished are charged separately.

Safe load in pounds per square foot uniformly distributed, including weight of sheet for corrugated steel sheets. Factor of five.

Span in feet	No. 24	No. 22	No. 20	No. 18	No. 16
2	600	780	1000	1200	1700
3	360	480	600	750	1000
4	200	270	340	420	550
5	120	170	215	270	350
6	90	120	150	180	250
7	65	85	110	135	180
8	50	65	80	100	140
9	40	50	65	90	110

HOW TO MEASURE ROOFING AND SIDING



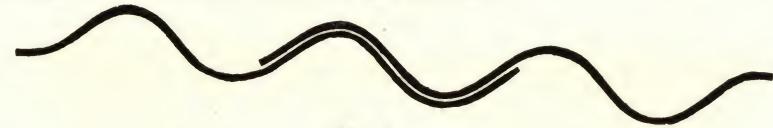
For ridge roof building, take measurements as shown by Fig. 1. For shed roof building, take measurements as shown by Fig. 2. When making measurements include and allow sufficient protection at eave.

NUMBER OF SHEETS IN ONE SQUARE

Size							
2½-in. Corrugated	26x60	26x72	26x84	26x96	26x108	26x120	26x144
Size	9.234	7.692	6.594	5.769	5.128	4.615	3.846
1¼-in. Corrugated							
Size							
2-V Crimp	24x60	24x72	24x84	24x96	24x108	24x120	24x144
3-V Crimp							
Pressed Standing Seam							
Beaded Pressed Standing Seam	10.	8.333	7.143	6.25	5.555	5.	4.166
Beaded Ceiling							
Weatherboard Siding							
Size	28x60						
Brick Siding	8.572						
Rock Face Brick Siding							

DIRECTIONS FOR LAYING CORRUGATED ROOFING

Should have three to six inches for end lap, and one and one-half corrugates for side lap, as shown in No. 1. Observe that the left edge curves downward and the right edge curves upward. This is accomplished by inverting alternate sheets. Such sheets will be made for roofing only when so ordered. Two corrugates are also used for side lap, but are no better than one and one-half.



No. 1



No. 2

DIRECTIONS FOR LAYING CORRUGATED SIDING

Commencing at left hand corner, lay the courses from base to cornice, giving sheets a lap of one inch at the end, and one corrugation at the side of sheet. Nail side laps every six inches, and end laps in every other corrugation, driving nails as shown in No. 2.

If siding is put on studding, care should be taken to have the studding the same distance as the laying width of iron used. A piece of wood should be put in between the studding, at the end of the sheet, to which to nail the laps. If posts are used, girths can be placed 2 to 8 feet apart, and side laps riveted about every 12 inches.

CORRUGATED ELEVATOR SIDING

In covering grain elevators it is necessary to use swinging scaffolds. Commence at the base and carry the courses up to the eave the length of scaffold. Beginning at left hand, give the sheet a lap of one corrugation on the side, and one inch lap on the end. Nail in every corrugation three inches from lower edge of sheet; this allows for the settling of two inches in every sheet. Put no nails in side laps. Finish up the corners by putting on ridge capping or corner pieces.

MEASUREMENTS OF CORRUGATED SHEETS—DIMENSIONS OF SHEETS AND CORRUGATIONS

Kind of Corrugation	Width of Corrugation	Depth of Corrugation	No. of Corrugations to the Sheet	Covering Width After Lapping One Corrugation	Width of Sheet After Corrugated	Length of the Longest Sheets we Furnish
5 in.	5 in.	1 in.	6	24 in.	27 in.	10 ft.
2½ in.	2½ in.	½ to ¾ in.	10	24 in.	26 in.	10 ft.
1¼ in.	1¼ in.	¾ to ½ in.	19½	25 in.	26 in.	10 ft.
¾ in.	¾ in.	¼ in.	34½	25 in.	26 in.	8 ft.

In quoting prices we make no allowance for laps, but measure the full size of sheet after it is corrugated.

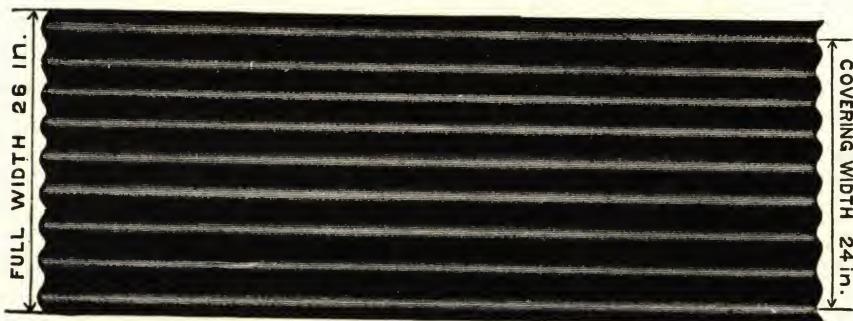
CONTENTS OF CORRUGATED SHEETS AS FIGURED IN SELLING

Size of Corrugation	LENGTH OF SHEETS										
	5 Feet	5½ Feet	6 Feet	6½ Feet	7 Feet	7½ Feet	8 Feet	8½ Feet	9 Feet	9½ Feet	10 Feet
5 inch.	11½	12½	13½	14½	15½	16½	18	19½	20½	21½	22½
2½ inch.	10½	11½	13	14½	15½	16½	17½	18½	19½	20½	21½
1¼ inch.	10½	11½	13	14½	15½	16½	17½	18½	19½	20½	21½
¾ inch.	10½	11½	13	14½	15½	16½	17½	....	....	....	....

CORRUGATED SHEETS

2½-INCH CORRUGATION

Painted or Galvanized



Corrugations 2½ inches from center to center and $\frac{5}{8}$ inch deep, made of No. 16 gauge and lighter. Sheets when corrugated measure 26 inches wide, and cover 24 inches from center to center of outside corrugations.

Of the above sizes our 2½-inch corrugated sheets are the standard for all covering purposes.

→ The selling width of all corrugated sheets is the full width, after formed. No allowance for laps.

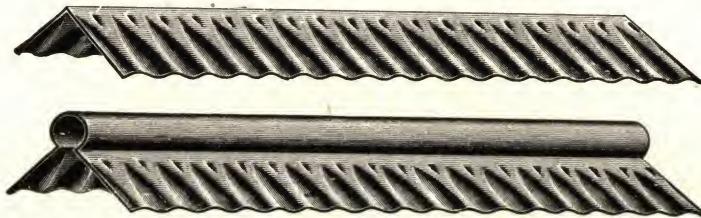
HOW TO ESTIMATE AMOUNT AND COST OF CORRUGATED SHEETS

First select the best lengths of sheets to fit the space, bearing in mind the end laps. On siding, inch lap will do, while for roofing nothing less than 3 inches, and if a slight pitch, 6 inches for end lap. As each sheet of No. 28 gauge lays just 2 feet wide, it is a simple matter to ascertain the number of sheets necessary to cover the space. Then estimate the number of feet in our 2 and 2½-inch corrugated sheets, as follows:

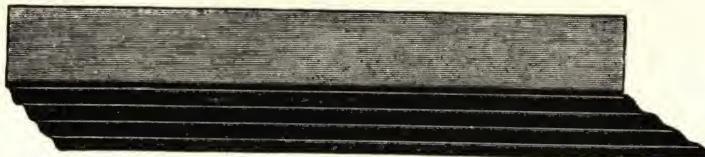
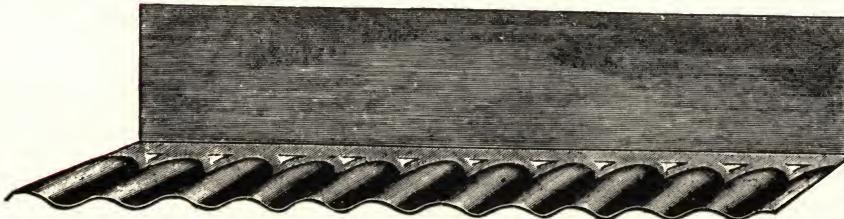
- 6 feet long, 13 sq. ft., lay 2 feet wide, selling measure 26 in. wide
- 7 feet long, 15½ sq. ft., lay 2 feet wide, selling measure 26 in. wide
- 8 feet long, 17½ sq. ft., lay 2 feet wide, selling measure 26 in. wide
- 9 feet long, 19½ sq. ft., lay 2 feet wide, selling measure 26 in. wide
- 10 feet long, 21½ sq. ft., lay 2 feet wide, selling measure 26 in. wide

On 1¼-inch or small corrugated sheet, figure as follows:

- 6 feet long, 13 sq. ft., lay 2 feet wide, selling measure 26 in. wide
- 7 feet long, 15½ sq. ft., lay 2 feet wide, selling measure 26 in. wide
- 8 feet long, 17½ sq. ft., lay 2 feet wide, selling measure 26 in. wide

CORRUGATED RIDGE ROLL AND CAPPING

	Painted	Galvanized
Ridge Roll, per foot.....	\$.....	\$.....
Ridge Capping, per foot	\$.....	\$.....

CORRUGATED SIDE WALL FLASHING**CORRUGATED END WALL FLASHING**

PRICE LIST
Corrugated Flashing

	Painted	Galvanized
No. 28 gauge steel, side wall flashing, per lineal foot.....	\$.....	\$.....
No. 28 gauge steel, end wall flashing, per lineal foot.....	\$.....	\$.....

CORRUGATED WOOD FILLER

Corrugated wood filler should be used under the corrugated sheet both sides of the eaves, filling up the spaces between the corrugations, that would otherwise be left open, and thus keeping out the driving storms and winds.

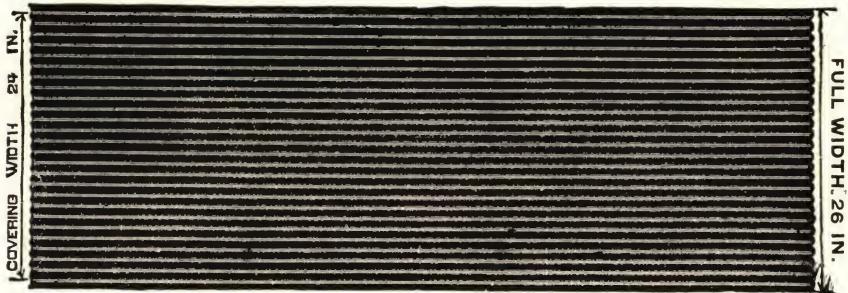
Price per lineal foot..... \$.....

CORRUGATED SHEETS

We carry in stock 5, 6, 7, 8, 9 and 10 foot lengths, in $2\frac{1}{2}$ and $1\frac{1}{4}$ inch corrugation. No. 28 gauge and 8 foot sheets, painted both sides, are always shipped when not otherwise specified.

$\frac{5}{8}$ -INCH CORRUGATION

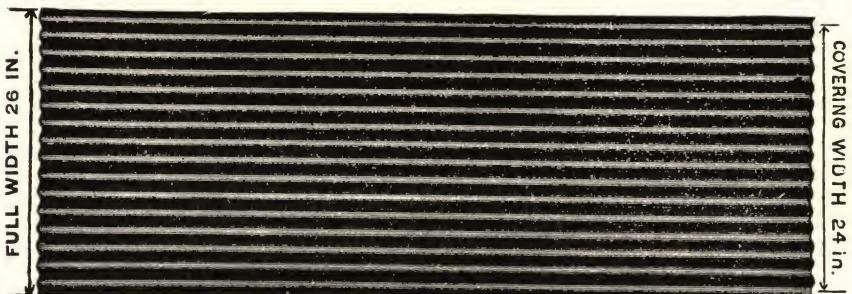
Painted or Galvanized



Corrugation $\frac{5}{8}$ inch from center to center, and $\frac{1}{8}$ inch deep, made of No. 24 gauge and lighter, not longer than 8 feet. Used for ceilings, partitions, lining inside wooden frame work, etc.

$1\frac{1}{4}$ -INCH CORRUGATION

Painted or Galvanized



Corrugation $1\frac{1}{4}$ inches from center to center, and $\frac{3}{8}$ inch deep, made of No. 22 gauge and lighter. Sheets when corrugated measure 26 inches wide, and will cover 25 inches from center to center of outside corrugations.

Our $1\frac{1}{4}$ -inch corrugated sheets are used for all covering purposes.

CURVED CORRUGATED SHEETS

2½-INCH CORRUGATION

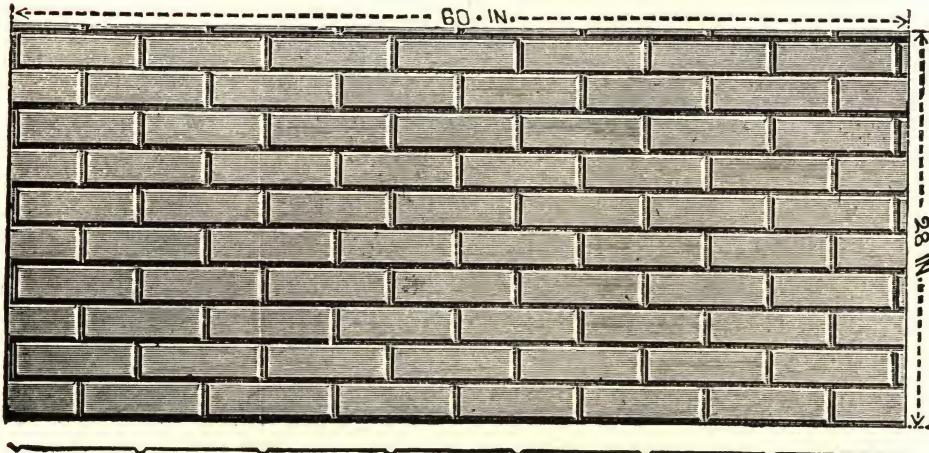


Curved to Any Radius

Shows corrugated sheet for roofing and ceiling. We curve the sheets to any required radius, and of any strength. We curve the corrugation as shown. We guarantee all curving perfect and to correspond with specifications furnished.

PRESSED BRICK SIDING

Painted or Galvanized



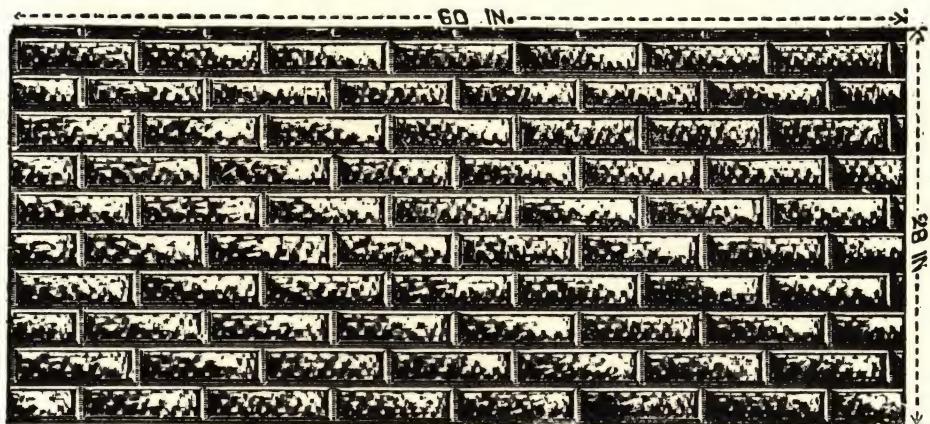
Size of Single Brick, $2\frac{1}{5} \times 8\frac{1}{4}$ Inches

Sheets, 60 x 28 Inches

Shows pressed steel brick siding ready for application. Can be applied by any mechanic. Lays perfectly smooth.

Costs no more than best wood siding and about one-fifth that of brick.

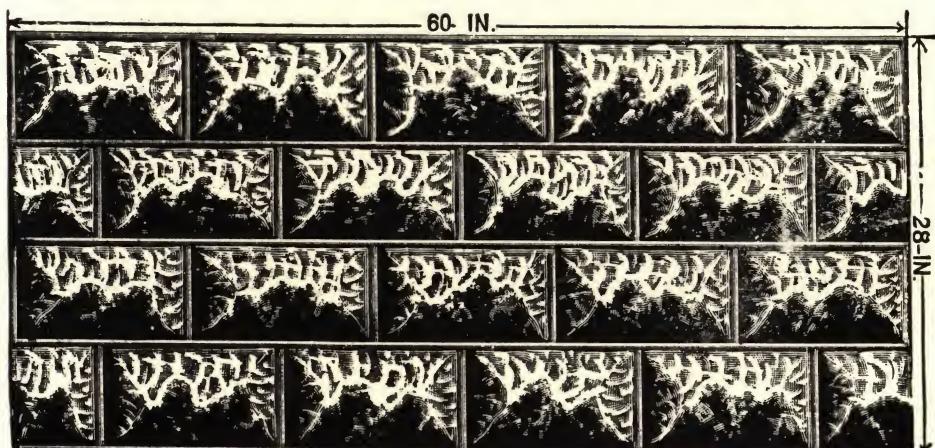
ROCK-FACE BRICK AND STONE SIDING
ROCK-FACE BRICK



Furnished painted or galvanized.

Size of single brick, $2\frac{1}{4} \times 5\frac{1}{4}$ inches. Sheets 28 x 60 inches.

ROCK-FACE STONE



Furnished painted or galvanized.

Size of single stone, 7 x 12 inches. Sheets 28 x 60 inches.

CRIMPED EDGE ROOFING



Painted or Galvanized

The simplest style and cheapest form of any metal roof manufactured, and for many purposes as satisfactory as more expensive kinds.

We recommend this roof to those wishing a good, cheap and durable covering for barns, warehouses, saw mills, cotton sheds, etc.

The cut shows sheet of our pressed crimped edge roofing as shipped. Sheet will lay 24 inches from center to center of crimps and is furnished in 5, 6, 7, 8, 9 and 10-foot lengths. We ship No. 28 gauge, 8-foot sheets; also necessary triangular wood strips, unless otherwise ordered, but when furnished these are charged extra.

One square consists of $6\frac{1}{4}$ sheets 24 x 96 inches, or equivalent, and will lay *one square less* the lock or lap at the end of the sheets.

Always state when ordering if wood sticks are desired. Locked ends furnished at regular extras.

THREE-CRIMPED ROOFING



Painted or Galvanized

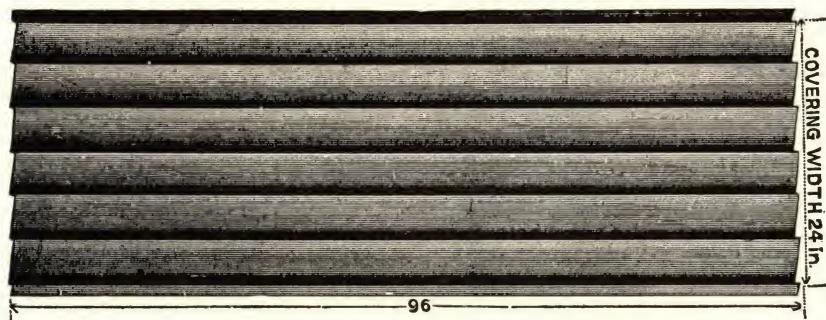
Shows our pressed three-crimp roofing. The center crimp stiffens the sheet and prevents rattling. The sheet covers 2 feet, being 24 inches from center to center of outside crimps. The number of sheets to a square, quality and weight, same as two-crimp. Requires double as many wood strips, and is 10 cents per square higher in price than two-crimp.

When ordering three-crimp roofing always state whether or not sticks are wanted.

WEATHER-BOARD SIDING

Used extensively as siding on frame buildings. Cheap, durable and fire-proof, and a desirable substitute for wooden weather-boarding.

Painted or Galvanized



Regular sheets are 8 feet long. Is a perfect imitation of weather-boarding or clap-boards. It is advisable to order sheets in lengths to suit distance from center to center of studding to avoid waste.

BEADED SIDING AND CEILING

Made from the Best Quality Steel

Painted on both sides with the best iron oxide paint, ground in pure linseed oil.



Shows sheet of beaded SIDING AND CEILING. Sheets when beaded cover 24 inches from center to center of outside beads, and can be furnished any length up to 8 feet. The beads are small corrugations, $\frac{3}{8}$ inch wide and $\frac{1}{8}$ inch deep, and 3 inches from center to center.

This style of ceiling is very desirable in stores, churches, warehouses, factories, engine rooms, boiler rooms, public halls, paper mills, glass factories, etc.

**PRICE LIST PER 100 SQUARE FEET OF STEEL ROOFING
SHOWING EXTRAS TO BE ADDED FOR VARIOUS STYLES**

Base prices 2-inch, 2½-inch and 3-inch Corrugation.

Bessemer Steel																
28 Gauge	27 Gauge	26 Gauge	24 Gauge	22 Gauge	20 Gauge	18 Gauge	16 Gauge	A Square	A Square	A Square	A Square	A Square	A Square	A Square	A Square	
Ptd.	Ptd.	Ptd.	Ptd.	Ptd.	Ptd.	Ptd.	Ptd.	Glv.	Glv.	Glv.	Glv.	Glv.	Glv.	Glv.	Glv.	
{ Base																
Genuine Old Fashioned Wrot Iron																
{ Base																
Charcoal Iron																
{ Base																
Differentials to be Added to Base																
1 1/4 and 5/8 inch Corrugated.....	\$.10	\$.10	\$.10	\$.10	\$.10	\$.10	\$.10	\$.15	\$.15	\$.30	\$.15	\$.30	\$.15	\$.30	\$.15	
V Crimp, without sticks.....	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	
V Crimp, with sticks.....	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	
3 V Crimp, without sticks.....	.10	.15	.10	.15	.10	.15	.10	.20	.10	.20	.10	.20	.10	.25	.10	
3 V Crimp, with side sticks.....	.20	.25	.20	.25	.20	.25	.20	.30	.20	.30	.20	.30	.20	.35	.25	
3 V Crimp, with side and center sticks.....	.30	.35	.30	.35	.30	.35	.30	.40	.30	.40	.30	.40	.30	.45	.35	
Pressed Standing Seam, without cleats.....	.10	.10	.15	.10	.15	.10	.15	.15	.15	.25	.15	.25	.15	.35	.15	
Pressed Standing Seam, with cleats.....	.15	.20	.25	.20	.25	.20	.25	.25	.25	.35	.25	.35	.25	.45	.25	
Pressed Standing Seam, with cleats and end locks cut.....	.20	.30	.35	.30	.35	.30	.35	.35	.35	.35	.35	.35	.35	.50	.35	
Plain Roll, without fixtures.....	.15	.15	.20	.15	.20	.15	.20	.15	.20	For Double Cross Lock						
Plain Roll, with cleats.....	.20	.25	.25	.25	.30	.25	.30	.25	.30	5c a square advance						
Roll and Cap, with caps and cleats.....	.25	.30	.35	.35	.40	.30	.40	.35	.40							
Self Capping, with fixtures.....	.20	.25	.30	.25	.30	.25	.30	.25	.30							
Self Capping, with cleats.....	.25	.35	.35	.35	.35	.35	.35	.35	.35							
Pressed Brick Siding.....	.10	.10	.10	.10	.10	.10	.10	.10	.10							
Rock Faced Brick and Stone.....	.20	.20	.20	.20	.20	.20	.20	.20	.20							
Weather Board Siding.....	.30	.35	.40	.35	.40	.35	.40	.35	.40							
Beaded Ceiling.....	.20	.30	.30	.35	.30	.35	.30	.35	.30							
Style B and C Ceiling.....	.20	.20														
Over 10 to 12 foot length.....	.10	.10	.10	.10	.10	.10	.10	.10	.10							
For Curving 2½ in. Corrugated, single curve.....	.15	.20	.20	.20	.20	.25	.25	.30	.35	.40	.40	.45	.55	.60	.65	.70
Ridge Cap or Roll 12 in. girth (a lin. foot).....	.03	.04	.03½	.04½	.04	.05	.04½	.05½	.05	.06	.06	.07	.07	.08		

WEIGHTS

The weights of iron and steel sheets before being painted are based on U. S. Standard Gauge, as follows:

No. of gauge.....	28	27	26	24	22	20	18	16
Weight per square foot.....	.625	.6875	.75	1.00	1.25	1.50	2.00	2.50

* No. 28 is always shipped when the gauge wanted is not specified.

Approximate Weight Corrugated, Beaded and V Crimp

No. of gauge.....	28	27	26	24	22	20	18	16
Painted, pounds.....	68	75	84	111	138	165	220	275
Galvanized, pounds.....	82	91	98	127	154	182	236	291
				Painted			Galvanized	
No. of gauge.....					28	27	28	27
Weather Boarding, pounds.....					74	82	91	98
Standing Seam, pounds.....					71	78	89	96
Roll and Cap, pounds.....					74	82	91	98

SCHEDULE SHOWING EXTRAS TO BE ADDED FOR
VARIOUS STYLES
OF
OSBORN'S

ROOFING AND SIDING

GAUGES	No. 28	No. 27	No. 26	No. 24	No. 22	No. 20	No. 18
	Galv.	Galv.	Ptd. Galv.	Ptd. Galv.	Ptd. Galv.	Ptd. Galv.	Ptd. Galv.
Carloads, Base							
Prices per Square							
2½ in. Corrugated				base			
Sheets f. o. b.				base			
100 Squares or More							
50 to 100 Squares							
Less than 10 Squares	10 cents	above	base				
DIFFERENTIALS TO BE ADDED TO BASE							
2-in., 1¼-in. and 5/8-in. Corrugated	10	10	10	10	15	30	25
V Crimp, no Sticks							
3 Crimp, no Sticks	15	15	10	15	10	20	10
Pressed Standing Seam, with Cleats	20	20	25	20	25	35	25
Plain Roll Roofing, with Cleats	20	20	25	30	25	30	
Roll and Cap Roofing, with Caps and Cleats	50	50	40	50	40	60	
Pressed Brick Siding	10	10	10	10			
Rock Face Brick Siding	20	20	20	20			
Rock Face Stone Siding	20	20	20	20			
Weather Board Siding	35	35	40	40	40		
Beaded Ceiling	30	30	30	30	35	40	

EXTRAS. Sticks for V crimp, 10 cents per square.

Sticks for 3 crimp, 20 cents per square.

End locks turned V crimp and pressed standing seam roofing, 10 cents per square.

Roofing and siding primed white, 10 cents per square.

Sheets corrugated crosswise, 10 cents per square.

Roofing nails, 5 cents per pound.

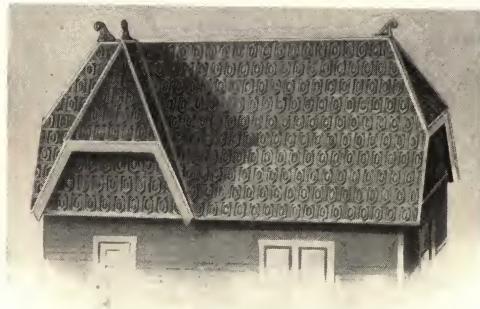
Dry iron paint, 2 cents per pound.

Lead washers, 15 cents per pound.

Curving 2½-inch corrugated sheets 50 cents per 100 pounds.

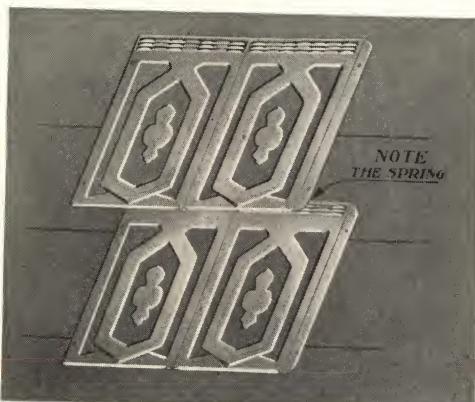
“OSBORN” METAL SHINGLES

**Fire Proof
Inexpensive
Sanitary
Weather Proof
Ornamental
Permanent**



**Notice the Neat,
Ornamental
and Attractive
Effect Produced
When in
Combination
on a Roof**

“Osborn” Metal Shingles can be used on any style of roof, for dwellings, public buildings, school houses, barns, sheds, etc., when the roof has a pitch of three or more inches to the foot. “Osborn” Metal Shingles can be used as siding or gable ornamentation, being absolutely water tight and artistic. The cost of “Osborn Metal Shingles, while more than other forms of metal roofing, is less than the first quality of slate, and is as low, and cheaper in some localities, than good wooden shingles when their service and permanency are considered. A comparison of the initial expense is not to be accounted, because it takes but a few years for the saving they effect in repairs and other ways to greatly outweigh their first cost. They are also the cheapest to apply, because it does not require high-priced labor to put them on, as it does other forms of roofing. On a large roof the saving in this respect amounts to considerable.



“Osborn” Metal Shingles will give absolute roof protection. They are superior in every way to any other roof when comparing wearing qualities, artistic beauty and cost.

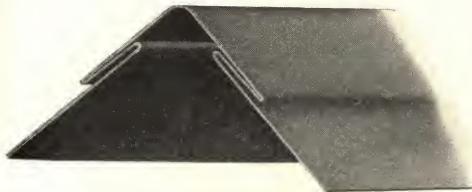


The lock is so constructed to give but two points of contact, thus forming an air chamber which destroys capillary suction and prevents the seeping of water through the joints.

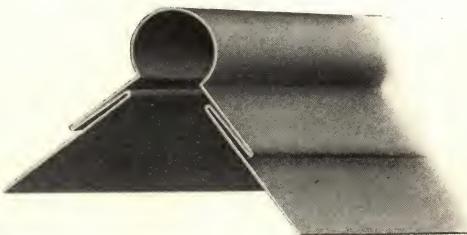
“Osborn” Metal Shingles made in three sizes: 7 x 10 in., 10 x 14 in., and 14 x 20 in. Packed in boxes containing sufficient quantity to lay one square to the weather.

Sizes, inches	7 x 10	10 x 14	14 x 20
Number per square.....	312	145	67
Weights per square, painted, pounds.....	84	79	78
Weights per square, galvanized, pounds.....	91	86	85
Price per square, painted.....	\$....	\$....	\$....
Price per square, galvanized.....	\$....	\$....	\$....

METAL SHINGLE ACCESSORIES



PLAIN RIDGE CAPPING



RIDGE ROLL CAPPING



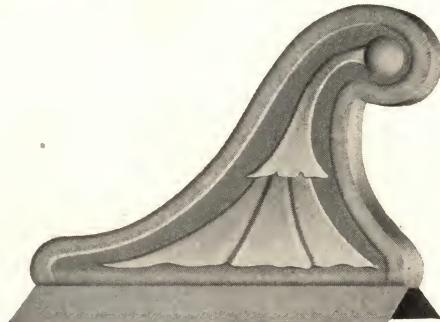
“OSBORN” HIP SHINGLE

Galvanized and painted. Embossed deep. Perfect workmanship, as shown in cut. Packed 250 in box.

Prices per 100

4 x 7	For wood shingles.....	\$....
4 x 9	For wood shingles.....	\$....
5 x 12	For wood or slate.....	\$....
5 x 12	Copper hip shingle.....	\$....

The object and style of capping is that the shingles are inserted in the folds over the nailing flange, thus protecting the nail heads from the weather, giving a neat finish, with nothing apparent at which roofing begins or terminates; also producing an absolute storm and water proof covering.

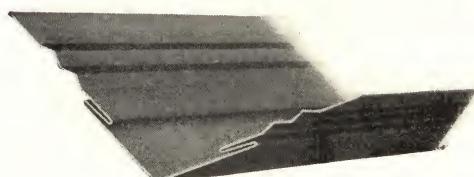


FINIALS

Used for terminals in connection with any style of ridge covering, adding greatly to the appearance and finish of the roof.

“OSBORN” PAINTED ACCESSORIES

Roll Ridge Capping per lin. ft.....	\$....
Plain Ridge Capping, per lin. ft.....	\$....
Valley, per lin. ft.....	\$....



VALLEY

“OSBORN” GALVANIZED ACCESSORIES

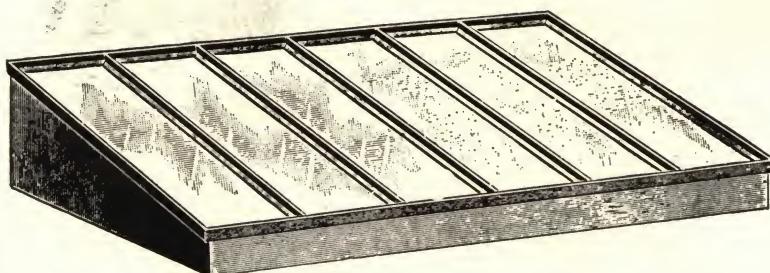
Roll Ridge Capping, per lin. ft.....	\$....
Plain Ridge Capping, per lin. ft.....	\$....
Valley, per lin. ft.....	\$....
Finials, each	\$....

SKYLIGHTS

Made of Best Galvanized Steel

In giving measurements, name distance from out to out of curbs, give thickness of curb.

Prices on copper, Toncan metal, charcoal iron, and special skylights quoted on application.

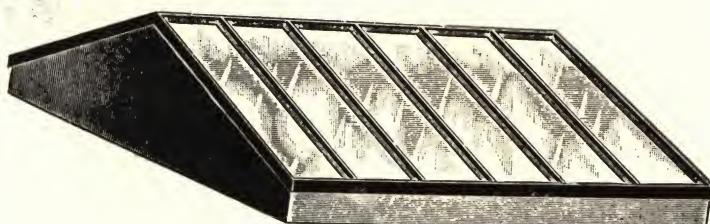


SINGLE PITCH SKYLIGHTS

Price List

2 x 3 feet, each.....	\$ 5.25	5 x 8 feet, each.....	\$21.00
3 x 3 feet, each.....	7.50	5 x 10 feet, each.....	25.00
3 x 4 feet, each.....	9.00	6 x 8 feet, each.....	24.00
3 x 6 feet, each.....	11.25	6 x 10 feet, each.....	30.00
4 x 4 feet, each.....	10.50	6 x 12 feet, each.....	36.00
4 x 6 feet, each.....	15.00	7 x 10 feet, each.....	35.25
4 x 8 feet, each.....	18.00	8 x 10 feet, each.....	40.50
5 x 6 feet, each.....	16.50	8 x 12 feet, each.....	48.00

Discount.....per cent.



DOUBLE PITCH SKYLIGHTS

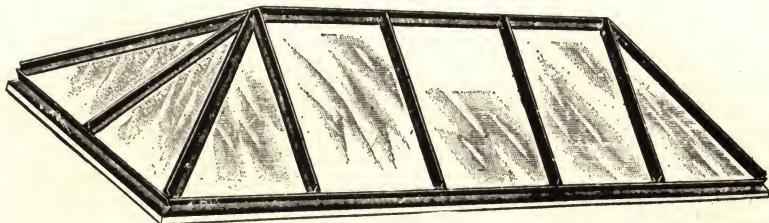
Price List

3 x 3 feet, each.....	\$ 9.00	5 x 8 feet, each.....	\$28.50
3 x 4 feet, each.....	11.25	5 x 10 feet, each.....	34.50
3 x 5 feet, each.....	13.50	6 x 8 feet, each.....	33.00
3 x 6 feet, each.....	15.00	6 x 10 feet, each.....	40.50
4 x 4 feet, each.....	14.25	6 x 12 feet, each.....	45.00
4 x 6 feet, each.....	19.50	8 x 10 feet, each.....	52.50
4 x 8 feet, each.....	24.00	8 x 12 feet, each.....	61.50
5 x 6 feet, each.....	22.50	10 x 14 feet, each.....	90.00

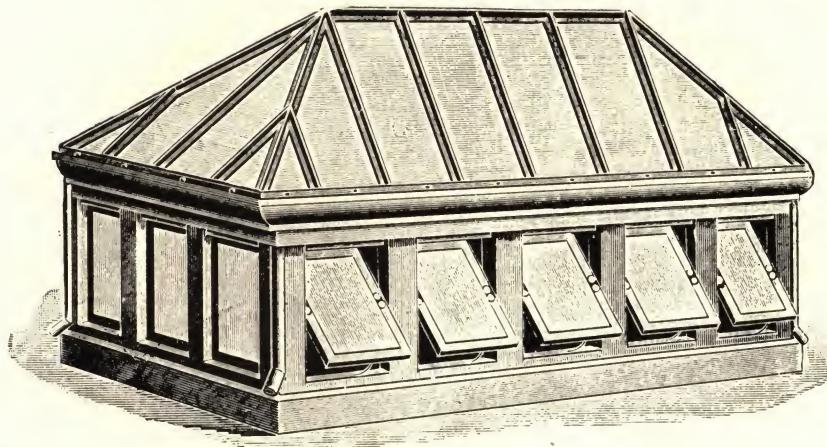
Discount.....per cent.

SKYLIGHTS

(Continued)

**HIPPED SKYLIGHTS****Price List**

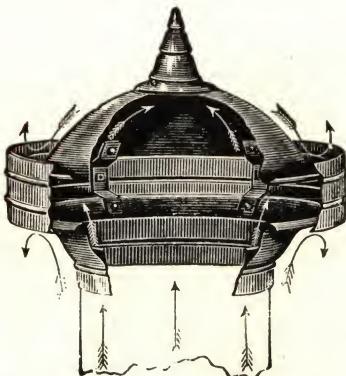
2 x 3 feet, each.....	\$ 7.50	5 x 10 feet, each.....	\$36.00
3 x 3 feet, each.....	11.25	6 x 8 feet, each.....	34.50
3 x 4 feet, each.....	13.50	6 x 9 feet, each.....	39.00
3 x 6 feet, each.....	17.25	6 x 10 feet, each.....	45.50
4 x 4 feet, each.....	15.00	6 x 12 feet, each.....	54.75
4 x 6 feet, each.....	21.00	7 x 10 feet, each.....	52.50
4 x 8 feet, each.....	27.00	7 x 12 feet, each.....	69.75
5 x 6 feet, each.....	25.50	12 x 14 feet, each.....	123.00
5 x 8 feet, each.....	30.00		

Discount.....per cent.

We estimate on this style of skylight from drawings or specifications, and shall be pleased to quote you at any time.

Prices given above are for skylights made entirely of galvanized steel, with $\frac{1}{4}$ inch glass, and in as large sections as convenient for transportation.

THE GLOBE VENTILATOR



**In Brass,
Copper,
Galvanized
Iron and
with Glass
Tops for
Skylight
Purposes**



Sectional Cut of the Globe Ventilator Showing the Movements of the Air Currents Inside and Outside of the Ventilator

By referring to this illustration it will be seen that the air, in striking the upper and lower dome, is deflected by the turned edges, which creates an exhaust in the ventilator and compels the air in the pipe to rush toward the head to fill the vacuum.

The globe ventilator is perfectly noiseless, and does its work silently and effectively.

No current of air can produce other than an upward draft, thus insuring perfect operation. It exhausts the heat from attics that is generated by the sun in shining on the roof, and renders the upper floors comfortable and habitable. Every house should be supplied with several of these ventilators, as one placed on the soil pipe would remove the impurities arising in every bath room, and protect the inmates from disease and death.

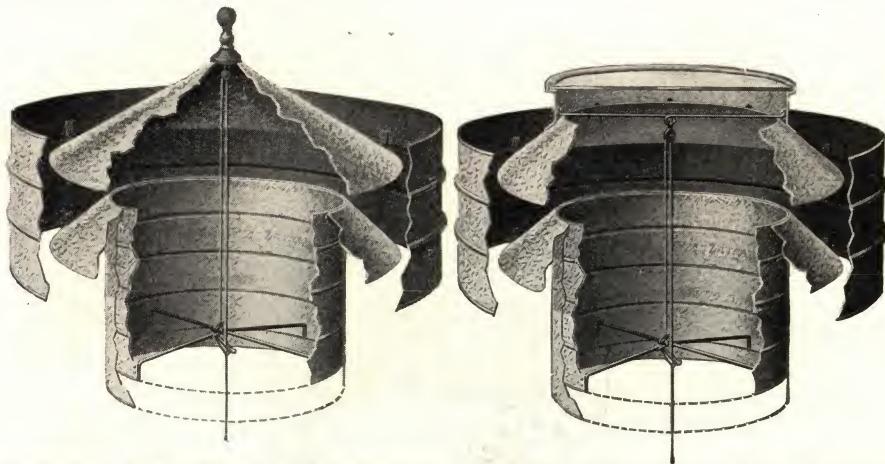
Price List—Galvanized Iron

Size	Price	Size	Price
2 inch.	\$ 1.00	18 inch.	\$27.00
2½ "	1.00	19 "	30.00
2¾ "	1.00	20 "	33.00
3 "	1.50	22 "	36.00
3½ "	1.50	24 "	40.00
4 "	1.75	26 "	50.00
4½ "	2.00	28 "	56.00
5 "	2.50	30 "	65.00
5½ "	2.85	32 "	80.00
6 "	3.40	34 "	100.00
7 "	4.00	36 "	120.00
8 "	4.65	38 "	150.00
9 "	5.20	40 "	180.00
10 "	5.75	44 "	200.00
11 "	6.20	48 "	240.00
12 "	6.75	50 "	260.00
13 "	9.00	54 "	300.00
14 "	13.00	60 "	360.00
15 "	16.00	64 "	400.00
16 "	20.00	72 "	480.00
17 "	23.00		

Discount.....per cent.

THE "BURT" VENTILATOR

Below we give a few of the exclusive features of the "BURT" Ventilator—look them over.



Sectional View Metal Top Showing Sliding Sleeve Damper (Patented)

Sectional View Glass Top Showing Sliding Sleeve Damper (Patented)

First—It has the telescopic or sliding sleeve damper (patented).

Second—It is a combination ventilator and sky-light in which the light from the sky is never obscured or shut out.

Third—The sliding-sleeve damper after once adjusted is held permanently in any position by a special attachment so that it is not necessary to fasten the cord to a nail, hook or post, as in the case where the common flat damper is used. The sliding-sleeve damper is not affected by air currents and this requires no attention.

Fourth—An especially designed band (patented) to fasten the glass so that on large sizes the glass can be shipped separately and easily placed in position. If glass is broken in any way, a new one can be placed in position without taking down the ventilator. Ventilator constructed so that no water will stand on glass.

PRICES, DIMENSIONS, WEIGHT AND GAUGE OF IRON OF THE BURT VENTILATOR

Diameter of Neck	Price	Gauge of Iron	Diameter of Outside Rim or Band	Net Weight Metal Top Without Crating	Net Weight Glass Top Without Crating
12 in.	\$ 5.00	22	22 in.	17 lbs.	20 lbs.
14 in.	7.50	22	24 in.	20 lbs.	24 lbs.
16 in.	10.00	22	26 in.	24 lbs.	30 lbs.
18 in.	12.50	20	29 in.	28 lbs.	34 lbs.
20 in.	15.00	20	32 in.	33 lbs.	42 lbs.
24 in.	18.00	20	38 in.	45 lbs.	56 lbs.
30 in.	25.00	18 & 20	46 in.	90 lbs.	105 lbs.
36 in.	37.50	18 & 20	54 in.	130 lbs.	155 lbs.
40 in.	50.00	18	64 in.	175 lbs.	200 lbs.
48 in.	60.00	18	78 in.	300 lbs.	320 lbs.
54 in.	70.00	16	86 in.	350 lbs.	400 lbs.
60 in.	80.00	16	94 in.	430 lbs.	480 lbs.
66 in.	90.00	16	102 in.	500 lbs.	550 lbs.
72 in.	100.00	16	110 in.	560 lbs.	610 lbs.

Discount Metal Top.....per cent.

Glass Top.....per cent.

THE "SWARTWOUT" ROTARY BALL-BEARING VENTILATOR

The new "Swartwout" Rotary Ball-bearing Ventilator is not stationary; it revolves so that wind blowing past it constantly induces air to flow from within the building. It differs essentially from the rim-bound circular stationary ventilator which acts on the principle of the chimney and is effective only in proportion to the difference in temperature within and without. The fact that Government Stations report an average minimum wind velocity over the entire country of four miles per hour makes it clear that the "Swartwout" is always operating to remove foul air, whether the air is cold or warm.



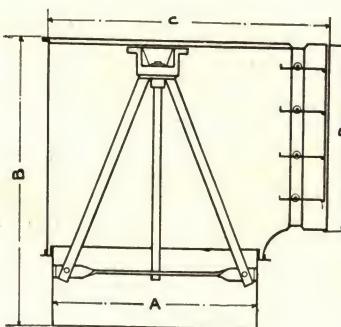
(Patent
Applied
For)

The "Swartwout" removes about one-third more air than stationary ventilators, due to the action explained above, and to the fact that the escaping air makes but one right-angle turn, and that of large radius. With the circular rim-bound types the air must make two right-angle turns. The "Swartwout" Ventilator, which is of the same size as the hole in the roof, is provided with four louvres or dampers which close by gravity and are opened by pulling a chain. The dampers are pivoted to operate with ease even in the case of large ventilators; objectionable and dangerous counterweights are entirely unnecessary.

SWARTWOUT ROTARY BALL-BEARING VENTILATORS

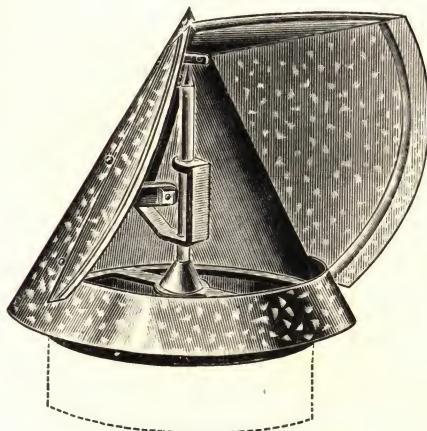
Price List and Principal Dimensions in Inches

A	B	C	D	Gauge Iron	Net Weight	Price
12	17½	18	11½	22	45	\$10.00
14	19½	20½	13	22	50	15.00
16	21½	23½	14½	22	60	20.00
18	23½	25½	16	22	70	25.00
20	25½	26½	18	20	90	30.00
24	28½	30½	20	20	120	35.00
30	34½	42	25	20	150	50.00
36	40	44	29½	18	200	75.00
42	45½	52½	33½	18	230	105.00
48	51½	59	38	18	285	120.00
54	57	64½	42½	18	330	140.00
60	62½	71	47	16	370	160.00
66	68¾	78	52	16	425	180.00
72	74	84	56	16	485	200.00



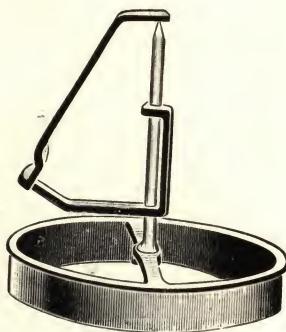
All ventilators are supplied with 6 feet of chain. Additional chain will be furnished at a nominal cost.

NEW ROTABLE STANDARD VENTILATOR



Patent applied for

HAS A SENSITIVE
BEARING



Patent applied for

One of the most durable and efficient ventilators on the market. Has a sensitive bearing not affected by heat or cold and never requires lubrication.

SIMPLE, EFFECTIVE AND STORM-PROOF

Furnished complete with casting and galvanized hood.

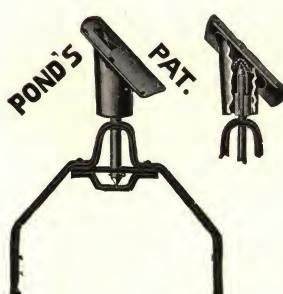
Size, inch.....	3	4	5	6	7	8	9	10	12	14
Price, each.....	\$1.50	1.75	1.95	2.12	2.30	2.60	2.90	3.40	4.40	6.20

Larger sizes made to order. Made up of copper to order.

Discount.....per cent.

POND'S IMPROVED VENTILATOR AND CHIMNEY TOP

EXCELS ALL OTHERS



It is stronger, does not get out of order, revolves much easier, has a double pivoted steel bearing which is noiseless and can't be made to squeak.

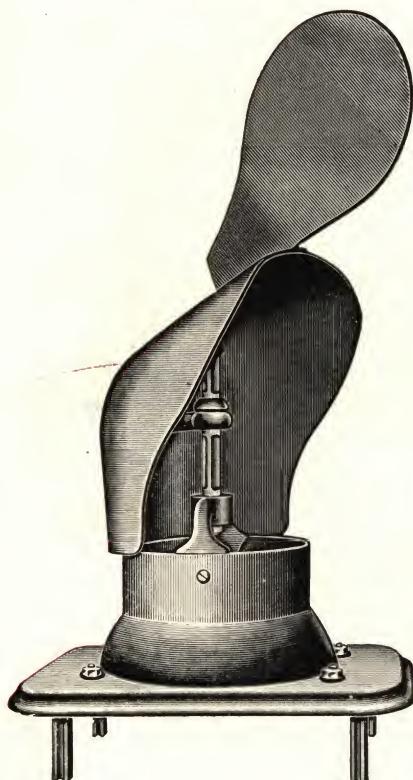
Inches	6	7	8	9	10	12	14
List per doz.....	\$8.00	9.00	10.00	11.50	13.00	15.00	17.00

The 6, 7 and 8-inch irons are made for ventilators, but smaller than 9-inch are not recommended for smoke chimneys.

Iron mountings packed 1 dozen sets in a box, each box containing patterns for hood and vane.

Discount.....per cent.

THE "BEST" REVOLVING CHIMNEY TOP



DESCRIPTION

As illustrated, is all made of cast iron, except the vane, which is made of heavy steel. Being fitted with perfectly adjusted ball bearings, above and below to take the side thrust, the slightest breeze turns the back of the hood to the wind and causes a suction at the opening which draws the smoke out, thus making a strong draft for the chimney. Absolutely prevents the rain from beating into the chimney, running down and discoloring the walls inside. It is practically indestructible and will last for years.

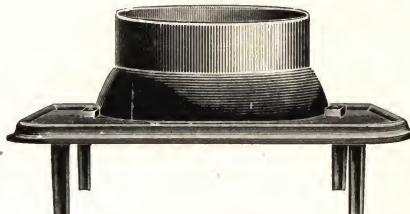
It is made in three sizes and the legs are adjustable so that each size will fit any chimney up to the largest size for which it is designed. The legs of the base project inside to prevent the top moving or being blown off.

No. 1½ for Chimneys	$\left\{ \begin{array}{l} 1\frac{1}{2} \times 2 \text{ brick flues } 4 \times 8 \\ 2 \times 2 \text{ brick flues } 8 \times 8 \\ 1\frac{1}{2} \times 2\frac{1}{2} \text{ brick flues } 4 \times 12 \\ 2 \times 2\frac{1}{2} \text{ brick flues } 8 \times 12 \end{array} \right.$
	Price each \$5.00.

No. 3 for Chimneys	$\left\{ \begin{array}{l} 2 \times 3 \text{ brick flues } 8 \times 16 \\ 2\frac{1}{2} \times 3 \text{ brick flues } 12 \times 16 \end{array} \right.$
	Price each \$6.50.

Discount.....per cent.

THE "BEST" CHIMNEY CAP



Packed one-half dozen in a crate.

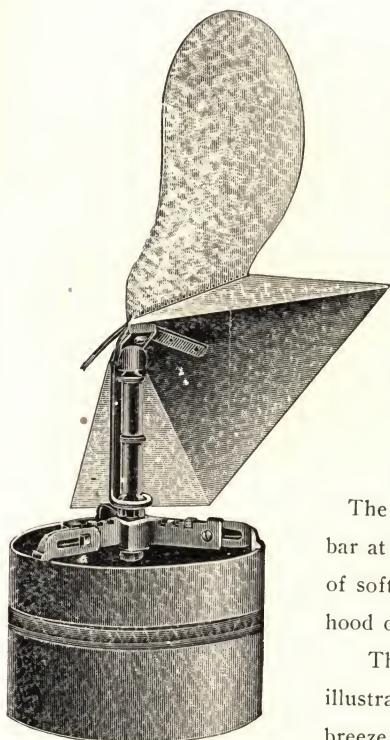
No. 10 for Chimneys	$\left\{ \begin{array}{l} 1\frac{1}{2} \times 2 \text{ brick flues } 4 \times 8 \\ 2 \times 2 \text{ brick flues } 8 \times 8 \end{array} \right.$
Collar for 7 in. pipe, per doz.	\$18.00.

No. 10½ for Chimneys	$\left\{ \begin{array}{l} 1\frac{1}{2} \times 2 \text{ brick flues } 4 \times 8 \\ 2 \times 2 \text{ brick flues } 8 \times 8 \\ 1\frac{1}{2} \times 2\frac{1}{2} \text{ brick flues } 4 \times 12 \\ 2 \times 2\frac{1}{2} \text{ brick flues } 8 \times 12 \end{array} \right.$
Collar for 8 in. pipe, per doz.	\$21.00.

No. 12 for Chimneys	$\left\{ \begin{array}{l} 2 \times 3 \text{ brick flues } 8 \times 16 \\ 2\frac{1}{2} \times 3 \text{ brick flues } 12 \times 16 \\ 2\frac{1}{2} \times 2\frac{1}{2} \text{ brick flues } 12 \times 12 \end{array} \right.$
Collar for 10 in. pipe, per doz.	\$29.00.

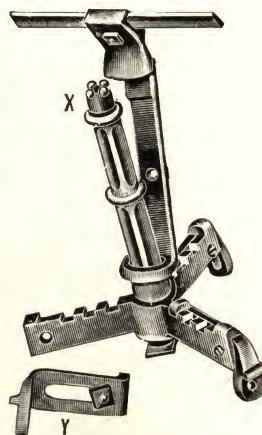
Discount.....per cent.

THE "BEST" ADJUSTABLE VENTILATOR



The first illustration shows the frame mounted with one-half the hood cut away.

The second illustration shows the construction of the frame.



DESCRIPTION

The Frame is made of cast iron except the cross-bar at top to which the hood is attached, which is made of soft steel and can easily be formed to fit any shaped hood desired.

The hood revolves on ball bearings (as shown in illustration), which allows it to turn with the slightest breeze and makes it noiseless. The spider is adjustable, the notches on spider arm being so arranged that by changing the clips at outer end, each notch changes the size one inch. They are made in the following sizes:

Frames only.

No. 50 is adjustable to fit a 7, 8 or 9-inch pipe, price per dozen.....\$12.00

No. 51 is adjustable to fit a 10, 11 or 12-inch pipe, price per dozen..... 15.00

Discount.....per cent.

GALVANIZED HOODS OR CAPS

State for what size pipe the cap is wanted and kind and gauge of material.

Made to Order Only

Price low.



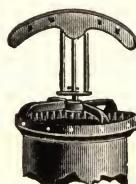
STAR SWING CHIMNEY TOP

Fig. 1

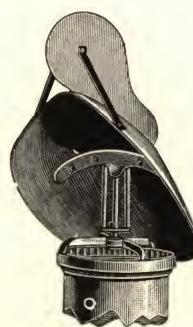


Fig. 2

Guaranteed to work in all kinds of weather.

Bolted on the outside of the pipe, giving full capacity and allowing no soot to collect.

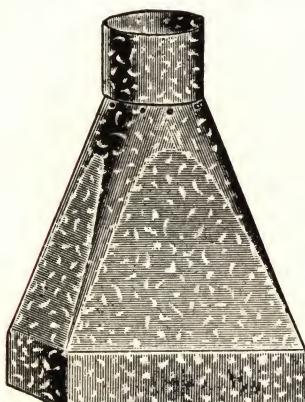
PRICE LIST**Castings Only**

Mounted and drilled as shown in cut Fig. 1, with bolts furnished.	Per Dozen
6 inch.....	\$11.50
7 "	13.50
8 "	15.00
9 "	16.50
10 "	18.00
12 "	22.00

With galvanized hood and vane, as shown in cut Fig. 2, rivet holes punched and bolts furnished.	Per Dozen
6 inch.....	\$16.50
7 "	19.50
8 "	22.00
9 "	25.50
10 "	29.00
12 "	35.00

Mounted and packed in boxes.

Discount.....per cent.

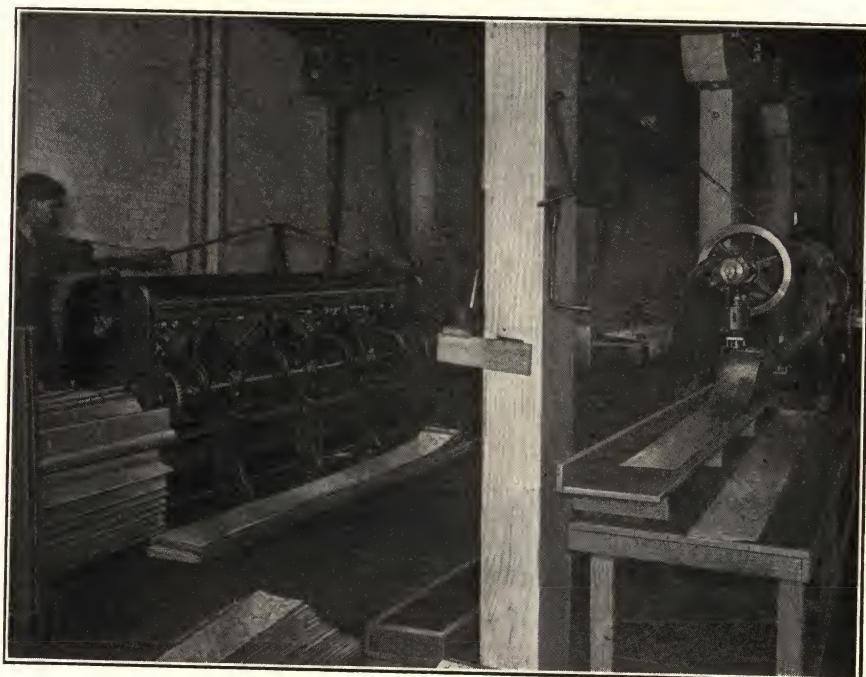
**GALVANIZED
CHIMNEY BASES****Made to Order**

All styles and sizes. Send sketch with accurate dimensions and description when asking price or ordering; also be sure to state material and gauge wanted.

A WORD ON OUR GUTTER AND CONDUCTOR PIPE

We have found it almost impossible to buy the kind of Gutter and Conductor Pipe good enough to sell to our trade, so have installed massive, expensive machinery to manufacture a line that we are proud to stamp with our name.

We have put in the most modern equipment money can buy and have added certain devices and machinery of our own to improve the quality of our work. We employ only men with experience, who have been trained to the Osborn method—this labor combined with our equipment and organization places our plant among the foremost of its kind in the country. We have eliminated any degree of chance with our Gutter and Conductor Pipe—you get a finished product made from the very best material by skilled workmen.



RIDGE ROLL AND FORMING MACHINE, ALSO PRESS FOR PUNCHING SLIP JOINTS



We call your special attention to the photographs on this page by means of which we have endeavored to set forth our new Slip Joint Eaves Trough. A glance at the cuts will give you a good idea of how it is made. We consume approximately 5 inches of material in making the slip joint which leaves a projection on the bottom of $\frac{1}{2}$ to $\frac{3}{4}$ of an inch which is used as a guide in starting the next length. After the piece has entered the slip the extra extension on the bottom acts as a further support or brace in making the joint strong. The bead at the slip end is cut on a curve and also projects past the end to assist the mechanic in starting the gutter easily. Our special slip joint eaves trough is worth more to you, because of its greater convenience and the time it saves.

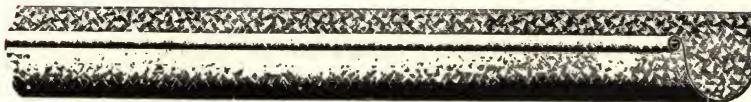


EAVES TROUGH

**GALVANIZED STEEL, GALVANIZED CHARCOAL IRON AND
TONCAN METAL**
Made in 10-foot Lengths



SLIP JOINT EAVES TROUGH
Single Bead



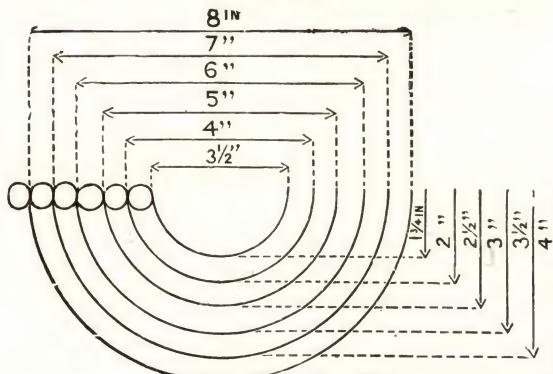
LAP JOINT EAVES TROUGH
Single Bead



SLIP JOINT EAVES TROUGH
Double Bead



LAP JOINT EAVES TROUGH
Double Bead



Shows Depth and Girth of Different Sizes Eaves Trough

Galvanized Trough heavier than 26 gauge is furnished in 8-foot lengths unless otherwise specified.

EAVES TROUGH

**GALVANIZED STEEL, GALVANIZED CHARCOAL IRON AND
TONCAN METAL**

Made in 10-foot Lengths

List Prices—Standard Gauge

SINGLE BEAD			DOUBLE BEAD		
Size	Slip Joint	Lap Joint	Size	Slip Joint	Lap Joint
3	\$0.14	\$0.13	3	\$0.17	\$0.16
3½	.15	.14	3½	.18	.17
4	.17	.16	4	.20	.19
4½	.19	.18	4½	.22	.21
5	.20	.19	5	.23	.22
6	.24	.23	6	.27	.26
7	.28	.27	7	.31	.30
8	.31	.30	8	.34	.33

Discount Galvanized Steel.....per cent.

Discount Galvanized Charcoal Iron.....per cent.

Discount Galvanized Toncan Metal.....per cent.

Packed in cases of 250 feet each.

Always state if Slip or Lap Joint is wanted. Slip Joint Single Bead will always be shipped unless otherwise ordered. Galvanized Steel will always be shipped unless ordered specifically "Galvanized Charcoal Iron" or "Toncan Metal."

For heavier gauges add to above list prices:

No. 27, add 4 cents.

No. 26, add 6 cents.

No. 24, add 12 cents.

EAVES TROUGH—Cold Rolled Copper

Size, in.....	Single Bead—Lap Joint								Single Bead—Slip Joint							
	3	3½	4	5	6	7	8	3	3½	4	5	6	7	8		
14 oz.....	.31	.36	.40	.50	.61	.71	.82	.34	.39	.43	.53	.64	.74	.85		
16 oz.....	.33	.39	.44	.54	.66	.77	.88	.36	.42	.47	.57	.69	.80	.91		
20 oz.....	.41	.49	.55	.67	.83	.96	1.10	.45	.53	.59	.71	.87	1.00	1.14		
Double Bead—Lap Joint																
Size, in.....	3	3½	4	5	6	7	8	3	3½	4	5	6	7	8		
14 oz.....	.37	.42	.46	.56	.67	.77	.88	.40	.45	.49	.59	.70	.80	.91		
16 oz.....	.39	.45	.50	.60	.72	.83	.94	.42	.48	.53	.63	.75	.86	.97		
20 oz.....	.49	.57	.63	.75	.91	1.04	1.18	.53	.61	.67	.79	.95	1.08	1.22		

Discount.....per cent.

DISCOUNT SHEET

GALVANIZED LAP JOINT GUTTER

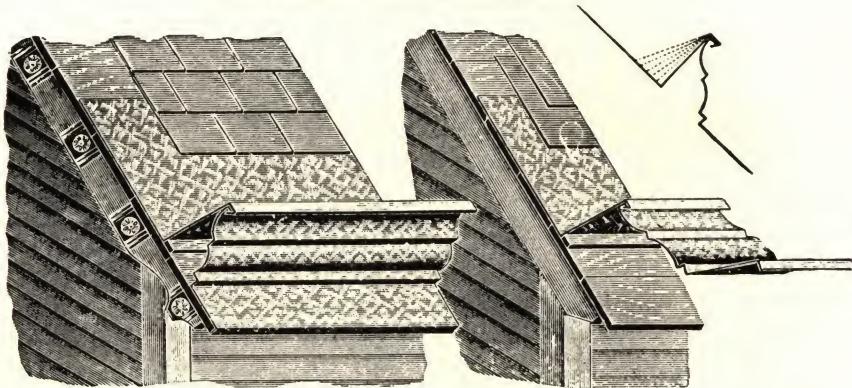
Net Prices per 100 Feet on Each Size at Various Discounts

Size	3 in. per 100 ft.	3½ in. per 100 ft.	4 in. per 100 ft.	4½ in. per 100 ft.	5 in. per 100 ft.	6 in. per 100 ft.	7 in. per 100 ft.	8 in. per 100 ft.	10 in. per 100 ft.
List	\$13.00	\$14.00	\$16.00	\$18.00	\$19.00	\$23.00	\$27.00	\$30.00	\$37.00
80-25-5 %	\$1.85	1.99	2.28	2.56	2.71	3.28	3.85	4.27	5.27
85-5	1.85	1.99	2.28	2.56	2.71	3.28	3.85	4.27	5.27
80-10-10-10	1.90	2.04	2.33	2.63	2.77	3.36	3.93	4.37	5.39
80-20-5-2½	1.93	2.08	2.37	2.67	2.82	3.41	4.00	4.45	5.48
80-25	1.95	2.10	2.40	2.70	2.85	3.45	4.05	4.50	5.55
85	1.95	2.10	2.40	2.70	2.85	3.45	4.05	4.50	5.55
80-20-5	1.98	2.13	2.43	2.74	2.89	3.50	4.10	4.56	5.62
80-10-10-5	2.00	2.16	2.46	2.77	2.93	3.56	4.15	4.62	5.69
80-10-10-2½	2.06	2.21	2.53	2.85	3.00	3.64	4.26	4.74	5.84
80-20	2.08	2.24	2.56	2.88	3.04	3.68	4.32	4.80	5.92
80-10-10	2.11	2.27	2.59	2.92	3.08	3.73	4.37	4.86	5.99
80-10-5-2½	2.16	2.33	2.67	3.00	3.17	3.83	4.50	5.00	6.17
80-10-5	2.22	2.39	2.74	3.08	3.25	3.93	4.62	5.13	6.33
80-10-2½	2.27	2.46	2.81	3.16	3.33	4.04	4.74	5.26	6.49
80-10	2.34	2.52	2.88	3.24	3.42	4.14	4.86	5.40	6.66
80-5-2½	2.41	2.59	2.96	3.33	3.52	4.26	5.00	5.56	6.85
80-5	2.47	2.66	3.04	3.42	3.61	4.37	5.13	5.70	7.03
80-2½	2.53	2.73	3.12	3.51	3.70	4.48	5.26	5.85	7.21
80	2.60	2.80	3.20	3.60	3.80	4.60	5.40	6.00	7.40
75-10-10	2.63	2.83	3.24	3.64	3.84	4.65	5.46	6.07	7.49
75-10-5-2½	2.70	2.92	3.33	3.75	3.96	4.79	5.63	6.25	7.70
75-10	2.76	2.98	3.40	3.83	4.04	4.89	5.74	6.38	7.86
75-10-5	2.77	2.99	3.42	3.85	4.06	4.91	5.77	6.41	7.90
75-12½	2.84	3.06	3.50	3.94	4.16	5.03	5.91	6.56	8.09
75-10-2½	2.85	3.07	3.51	3.95	4.16	5.04	5.92	6.58	8.11
75-10	2.92	3.15	3.60	4.05	4.27	5.17	6.07	6.75	8.32
75-7½	3.01	3.24	3.70	4.16	4.39	5.32	6.24	6.94	8.56
75-5-2½	3.01	3.24	3.70	4.16	4.40	5.32	6.25	6.95	8.57
75-5	3.09	3.32	3.80	4.27	4.51	5.46	6.41	7.12	8.79
75-2½	3.17	3.41	3.90	4.39	4.63	5.61	6.58	7.31	9.02
75	3.25	3.50	4.00	4.50	4.75	5.75	6.75	7.50	9.25
70-15	3.31	3.57	4.08	4.59	4.85	5.87	6.89	7.65	9.44
60-25-15	3.32	3.57	4.08	4.59	4.85	5.87	6.89	7.65	9.44
70-12½	3.41	3.67	4.20	4.72	4.99	6.04	7.09	7.87	9.71
60-25-12½	3.41	3.67	4.20	4.72	4.99	6.04	7.09	7.87	9.71
70-10	3.51	3.78	4.32	4.86	5.13	6.21	7.29	8.10	9.99
60-25-10	3.51	3.78	4.32	4.86	5.13	6.21	7.29	8.10	9.99
70-7½	3.61	3.88	4.44	4.99	5.27	6.38	7.49	8.32	10.27
70-5	3.70	3.99	4.56	5.13	5.41	6.55	7.69	8.55	10.54
60-25-5	3.70	3.99	4.56	5.13	5.41	6.55	7.69	8.55	10.54
70-2½	3.80	4.09	4.68	5.26	5.56	6.73	7.90	8.77	10.82
60-25-2½	3.80	4.09	4.68	5.26	5.56	6.73	7.90	8.77	10.82
70	3.90	4.20	4.80	5.40	5.70	6.90	8.10	9.00	11.10
60-20-5	3.95	4.26	4.86	5.47	5.78	6.99	8.21	9.12	11.25
60-22½	4.03	4.34	4.96	5.58	5.89	7.13	8.37	9.30	11.47
60-20-2½	4.06	4.37	4.99	5.62	5.93	7.18	8.42	9.36	11.54
60-20	4.16	4.48	5.12	5.76	6.08	7.36	8.64	9.60	11.84
60-17½	4.29	4.62	5.28	5.94	6.27	7.59	8.91	9.90	12.21
60-15	4.42	4.76	5.44	6.12	6.46	7.82	9.18	10.20	12.58
60-12½	4.55	4.90	5.60	6.30	6.65	8.05	9.45	10.50	12.95
60-10-2½	4.56	4.91	5.62	6.32	6.67	8.07	9.48	10.53	12.99
60-10	4.68	5.04	5.76	6.48	6.84	8.28	9.72	10.80	13.32
60-7½	4.81	5.18	5.92	6.66	7.03	8.51	9.99	11.10	13.69
60-5	4.94	5.32	6.08	6.84	7.22	8.74	10.36	11.40	14.06
60-2½	5.07	5.46	6.24	7.02	7.41	8.97	10.53	11.70	14.43
60	5.20	5.60	6.40	7.20	7.60	9.20	10.80	12.00	14.80

DISCOUNT SHEET**GALVANIZED SLIP JOINT GUTTER****Net Prices per 100 Feet on Each Size at Various Discounts**

Size	3 in. per 100 ft.	3½ in. per 100 ft.	4 in. per 100 ft.	4½ in. per 100 ft.	5 in. per 100 ft.	6 in. per 100 ft.	7 in. per 100 ft.	8 in. per 100 ft.	10 in. per 100 ft.
List	\$14.00	\$15.00	\$17.00	\$19.00	\$20.00	\$24.00	\$28.00	\$31.00	\$38.00
80-25-5 %	\$1.99	\$2.14	\$2.42	\$2.71	\$2.85	\$3.42	\$3.99	\$4.42	\$5.41
85-5	1.99	2.14	2.42	2.71	2.85	3.42	3.99	4.42	5.41
80-10-10-10	2.04	2.19	2.47	2.77	2.92	3.50	4.09	4.52	5.54
80-20-5-2½	2.08	2.22	2.52	2.82	2.96	3.56	4.15	4.59	5.64
80-25	2.10	2.25	2.55	2.85	3.00	3.60	4.20	4.65	5.70
85	2.10	2.25	2.55	2.85	3.00	3.60	4.20	4.65	5.70
80-20-5	2.13	2.28	2.58	2.89	3.04	3.65	4.26	4.71	5.78
80-10-10-5	2.16	2.31	2.61	2.93	3.08	3.70	4.31	4.77	5.85
80-10-10-2½	2.21	2.37	2.68	3.00	3.16	3.79	4.43	4.89	6.01
80-20	2.24	2.40	2.72	3.04	3.20	3.84	4.48	4.96	6.08
80-10-10	2.27	2.43	2.75	3.08	3.24	3.89	4.54	5.02	6.16
80-10-5-2½	2.33	2.50	2.84	3.17	3.33	4.00	4.67	5.17	6.34
80-10-5	2.39	2.56	2.91	3.25	3.42	4.10	4.79	5.30	6.50
80-10-2½	2.46	2.63	2.98	3.33	3.51	4.21	4.91	5.44	6.67
80-10	2.52	2.70	3.06	3.42	3.60	4.32	5.04	5.58	6.84
80-5-2½	2.59	2.78	3.15	3.52	3.70	4.45	5.19	5.74	7.04
80-5	2.66	2.85	3.23	3.61	3.80	4.56	5.32	5.89	7.22
80-2½	2.73	2.92	3.31	3.70	3.90	4.68	5.46	6.04	7.41
80	2.80	3.00	3.40	3.80	4.00	4.80	5.60	6.20	7.60
75-10-10	2.83	3.03	3.44	3.84	4.05	4.86	5.67	6.27	7.69
75-10-5-2½	2.92	3.12	3.54	3.96	4.16	5.00	5.83	6.45	7.92
75-15	2.98	3.19	3.61	4.04	4.25	5.10	5.95	6.59	8.08
75-10-5	2.99	3.20	3.63	4.06	4.27	5.13	5.98	6.62	8.12
75-12½	3.06	3.28	3.72	4.16	4.37	5.25	6.12	6.78	8.31
75-10-2½	3.07	3.29	3.72	4.16	4.39	5.26	6.14	6.80	8.34
75-10	3.15	3.37	3.82	4.27	4.50	5.40	6.30	6.97	8.55
75-7½	3.24	3.47	3.93	4.39	4.62	5.55	6.47	7.17	8.79
75-5-2½	3.24	3.47	3.94	4.40	4.63	5.56	6.48	7.18	8.79
75-5	3.32	3.56	4.04	4.51	4.75	5.70	6.65	7.36	9.02
75-2½	3.41	3.66	4.14	4.63	4.87	5.85	6.82	7.56	9.26
75	3.50	3.75	4.25	4.75	5.00	6.00	7.00	7.75	9.50
70-15	3.57	3.83	4.34	4.85	5.10	6.12	7.14	7.91	9.69
60-25-15	3.57	3.83	4.34	4.85	5.10	6.12	7.14	7.91	9.69
70-12½	3.67	3.94	4.46	4.99	5.25	6.30	7.35	8.14	9.97
60-25-12½	3.67	3.94	4.46	4.99	5.25	6.30	7.35	8.14	9.97
70-10	3.78	4.05	4.59	5.13	5.40	6.48	7.56	8.37	10.26
60-25-10	3.78	4.05	4.59	5.13	5.40	6.48	7.56	8.37	10.26
70-7½	3.88	4.16	4.72	5.27	5.55	6.66	7.77	8.60	10.54
70-5	3.99	4.27	4.84	5.41	5.70	6.84	7.98	8.83	10.83
60-25-5	3.99	4.27	4.84	5.41	5.70	6.84	7.98	8.83	10.83
70-2½	4.09	4.39	4.97	5.56	5.85	7.02	8.19	9.07	11.11
60-25-2½	4.09	4.39	4.97	5.56	5.85	7.02	8.19	9.07	11.11
70	4.20	4.50	5.10	5.70	6.00	7.20	8.40	9.30	11.40
60-20-5	4.26	4.56	5.17	5.78	6.08	7.30	8.51	9.42	11.55
60-22½	4.34	4.65	5.27	5.89	6.20	7.44	8.68	9.61	11.78
60-20-2½	4.37	4.68	5.30	5.93	6.24	7.49	8.74	9.67	11.86
60-20	4.48	4.80	5.44	6.08	6.40	7.68	8.96	9.92	12.16
60-17½	4.62	4.95	5.61	6.27	6.60	7.92	9.24	10.23	12.54
60-15	4.76	5.10	5.78	6.46	6.80	8.16	9.52	10.54	12.92
60-12½	4.90	5.25	5.95	6.65	7.00	8.40	9.80	10.85	13.30
60-10-2½	4.91	5.26	5.97	6.67	7.02	8.42	9.83	10.88	13.34
60-10	5.04	5.40	6.12	6.84	7.20	8.64	10.08	11.16	13.68
60-7½	5.18	5.55	6.29	7.03	7.40	8.88	10.36	11.47	14.06
60-5	5.32	5.70	6.46	7.22	7.60	9.12	10.64	11.78	14.44
60-2½	5.46	5.85	6.63	7.41	7.80	9.36	10.92	12.09	14.82
60	5.60	6.00	6.80	7.60	8.00	9.60	11.20	12.40	15.20

BELDING ROOF GUTTER

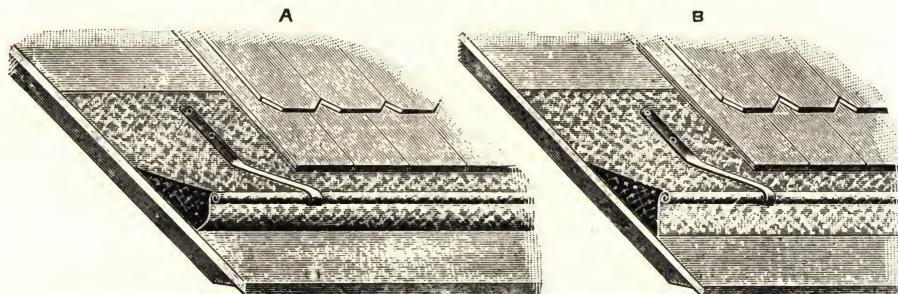


Made in two sections, quicker and more easily applied than any other. Substantial and beautiful in appearance. Endorsed by architects and builders.

PRICE LIST

Girt	Face Apron	Depth	Gutter Apron	No. 28 Galvanized per foot.....
12-inch	1½-inch	1½-inch	5½-inch	30 cents
15-inch	2 -inch	2 -inch	6 -inch	37 cents
20-inch	2 -inch	3 -inch	8 -inch	50 cents
24-inch	3 -inch	3½-inch	9½-inch	60 cents
28-inch	5 -inch	3½-inch	11 -inch	70 cents
30-inch	5 -inch	4 -inch	12 -inch	75 cents
<i>Discount.....</i>				<i>per cent.</i>

GALVANIZED ROOF GUTTERS



Style "A"



Style "B"

QUARTER CIRCLE, O. G. AND BOX GUTTERS

Made in 10-foot Lengths

Back of trough

Bead side



Style C



Style D



Style E



Style F



Style G



Style H



Style J

O. G. BOX AND ROOF GUTTERS

**Standard List, per foot, for
GALVANIZED STEEL AND GALVANIZED CHARCOAL IRON**

STYLES A B C D E F G AND H				STYLE J			
Girth	Standard	No. 26	No. 24	Girth	Standard	No. 26	No. 24
10	\$0.25	\$0.31	\$0.49	10	\$0.30	\$0.36	\$0.54
12	.30	.36	.54	12	.36	.42	.60
14	.35	.41	.59	14	.42	.48	.66
15	.37	.43	.61	15	.45	.51	.69
16	.40	.52	.64	16	.48	.60	.72
18	.45	.57	.69	18	.54	.66	.78
20	.50	.62	.74	20	.60	.72	.84
22	.55	.67	.79	22	.66	.78	.90
24	.60	.72	.84	24	.72	.84	.96
26	.65	.77	.89	26	.78	.90	1.02
28	.70	.82	.94	28	.84	.96	1.08
30	.75	.87	.99	30	.90	1.02	1.14

Intermediate Girths take list of next higher Girth. Wider than 30 inches add proportionately to list.

Special Gutters made according to architect drawings. Prices quoted on application.

All of our O. G. Box and Roof Gutter will be made from 26-gauge Galvanized Steel unless otherwise ordered. All sheets will be crimped $\frac{1}{16}$ inch. Crimped before forming to take out all buckles and add to appearance. We also make O. G. Gutters, etc., from Genuine Charcoal Galvanized Iron, Galvanized Toncan Metal, Copper, etc.

We show a cut of our regular stock O. G. style G Gutter on page 153 in connection with Hangers.

Gutters heavier than 26-gauge material will be furnished in 8-foot lengths.

O. G. Hangers, see page 153.

Wire Spikes for O. G. Gutter, see page 153.

GALVANIZED FLAT BACK GUTTER

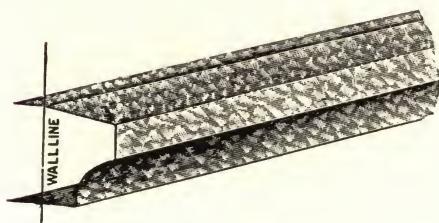


		No. 26, per foot	No. 24, per foot	No. 22, per foot
4	inch gutter, 13 inch girth.....	\$0.35	\$0.43	.....
4½	" " 14 " "	.38	.46	.....
5	" " 15 " "	.40	.48	.....
5½	" " 18 " "	.54	.66	.....
6	" " 20 " "	.59	.71	\$0.86
7	" " 24 " "	.69	.81	.96
8	" " 26 " "	.74	.86	1.06
9	" " 30 " "	.84	.96	1.16

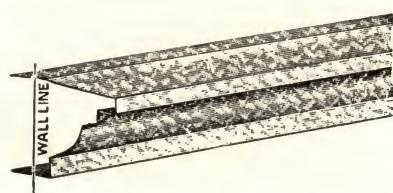
When not otherwise ordered we use 26-gauge. If gutters are formed to pitch add cents per foot.

CORNICES**Made of Galvanized Sheets**

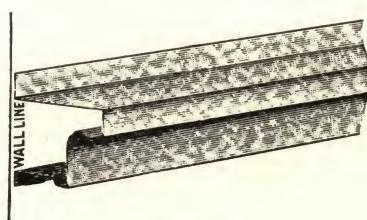
The following illustrations are intended to convey an idea of the character of work we manufacture, and for parties to select from who may not have chosen or prepared special designs of their own.

LINTEL CORNICES

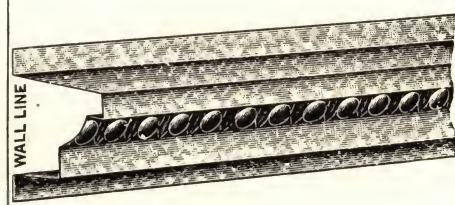
No. 10
Height, 4 1/4 in.; projection, 3 1/2 in.; girth,
12 in. Price per foot, \$0.12.



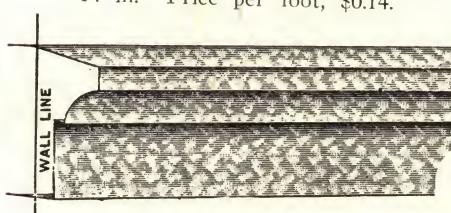
No. 14
Height, 4 1/4 in.; projection, 3 1/2 in.; girth,
12 in. Price per foot, \$0.12.



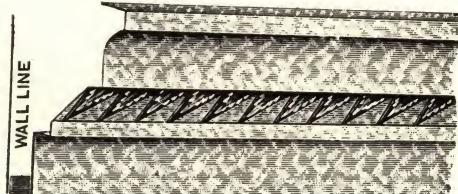
No. 11
Height, 4 in.; projection, 3 3/4 in.; girth,
14 in. Price per foot, \$0.14.



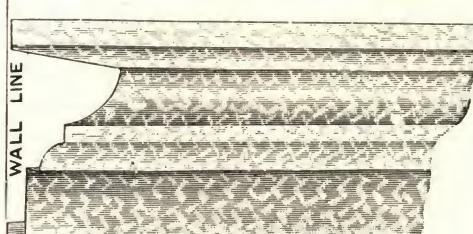
No. 15
Height, 7 in.; projection, 5 in.; girth, 18
in. Price per foot, \$0.27.



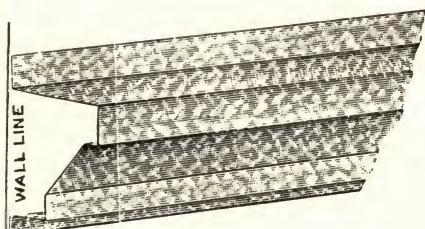
No. 12
Height, 7 in.; projection, 4 1/2 in.; girth,
16 in. Price per foot, \$0.16.



No. 16
Height, 12 in.; projection, 8 1/2 in.; girth,
20 in. Price per foot, \$0.30.



No. 13
Height, 11 in.; projection, 7 in.; girth,
24 in. Price per foot, \$0.24.

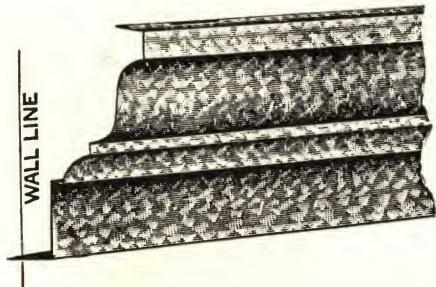


No. 17
Height, 8 in.; projection, 6 in.; girth,
20 in. Price per foot, \$0.20.

CROWN MOULDINGS

If furnished with diagram, we can make any size or style Moulding the customer may desire.

Prices on Belt Moulding, Galvanized or Copper, furnished on application.



No. 18

Height, 12 in.; projection, 7½ in.; girth, 20 in.; price per foot, \$0.20.



No. 19

Height, 12 in.; projection, 8 in.; girth, 20 in.; price per foot, \$0.20.

FOR WOOD



No. 20

Height, 10½ in.; projection, 4½ in.; girth, 21 in.; price, galvanized, per foot, \$0.22.

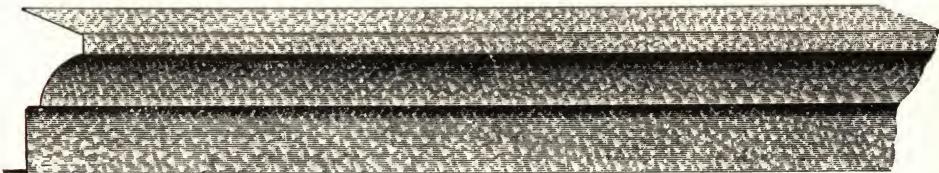
FOR WOOD



No. 21

Height, 13 in.; projection, 6½ in.; girth, 21 in.; price, galvanized, per foot, \$0.22.

FOR BRICK



No. 22

Height, 10 in.; projection, 5½ in.; girth, 21 in.; price, galvanized, per foot, \$0.21.

GALVANIZED VALLEYS

In Rolls

Made from 10-foot Galvanized Sheets. Furnished in Rolls of 50 Lineal Feet.



Standard Gauge

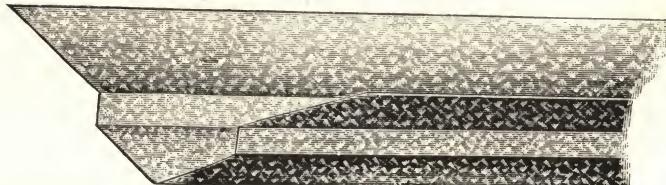
Price List, Per Lineal Foot

10	inch, galvanized.....	\$0.12½
14	" "	.17½
20	" "	.25
24	" "	.30
28	" "	.35
30	" "	.37½

Discount.....per cent.

All Valleys are locked and soldered on one side unless otherwise ordered.

In Sheets, 10 Feet Long

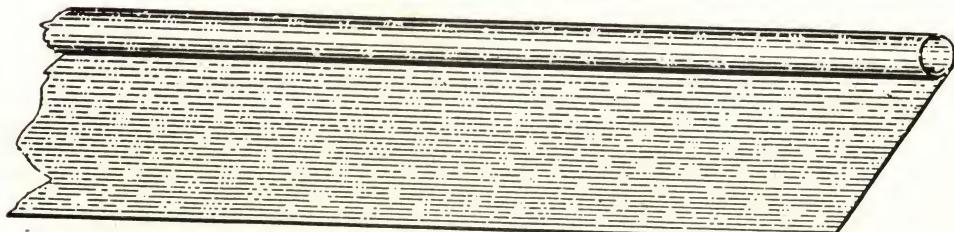


Girth, inches.....	10	12	14	16	20	24	28	30
Per lineal foot, 28 gauge.	\$0.12½	.15	.17½	.20	.25	.30	.35	.37

Discount.....per cent.

BEADED IRON

Made in 10-foot Lengths from Galvanized Sheets

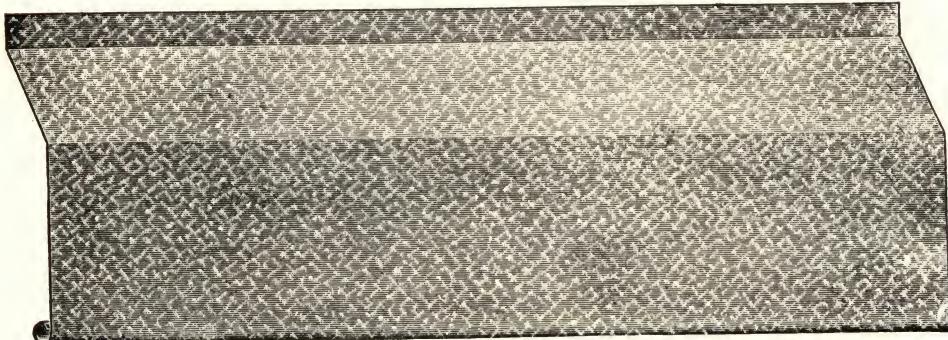


Girth, inches.....	6	8	10	12	14
Bead, inches.....	½	½	½	½	½
List per foot, 28 gauge.....	\$0.13	.16	.19	.23	.28

Discount.....per cent.

GALVANIZED TRACK COVER

Made in 10-foot sections, from best bloom Galvanized Steel sheets, for special protection to Barn Door Track from rain, snow and ice. Furnished in any quantity.



Standard Gauge, 10 inch Girth, \$0.20 per foot.
Discount.....per cent.

RIDGE ROLL

Made from Galvanized Sheets in 10-foot Lengths

We recently installed a specially built machine for making ridge roll and manufacture this product in very large quantities. Our ridge roll is well formed from end to end and the lengths match perfectly together. The popular stock sizes are 1½ inch and 2 inch roll with scant girth. All sizes carried in stock.

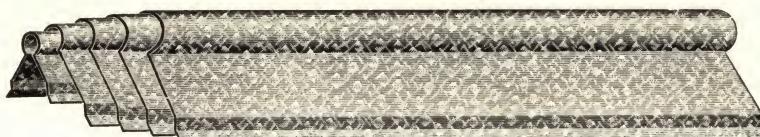


1½ inch, 8 inch girth, per foot.....	\$0.16
2 " 10 " " " .....	.19
3 " 12 " " " .....	.23
4 " 14 " " " .....	.28

Discount.....per cent.

OSBORN'S SPECIAL GALVANIZED RIDGE ROLL

There is some demand for Ridge Roll made with an additional brake on the apron edge. This edge fits closer to the roof and gives a firm nailing surface. The projection is about ½ inch. This style we call "Osborn's Special Galvanized Ridge Roll." Specify this style when ordering.

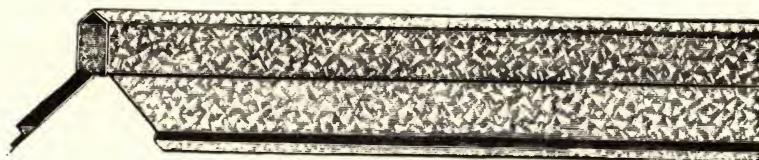


1½ inch, 9 inch girth, per foot.....	\$0.18
2 " 11 " " " .....	.22

Discount.....per cent.

GALVANIZED RIDGE CAPPING

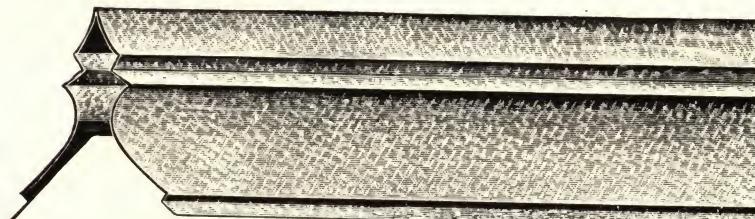
8 inch girth, per foot.....	\$.....
10 inch girth, per foot.....	.....
12 inch girth, per foot.....	.....
14 inch girth, per foot.....	.....

GALVANIZED IRON RIDGINGS**No. 1**

Height 4½ inches, apron 2½ inches, girth 12 inches, price, per foot.....	\$0.30
Height 6 inches, apron 3½ inches, girth 15 inches, price, per foot.....	.37
Height 8 inches, apron 4½ inches, girth 20 inches, price, per foot.....	.50

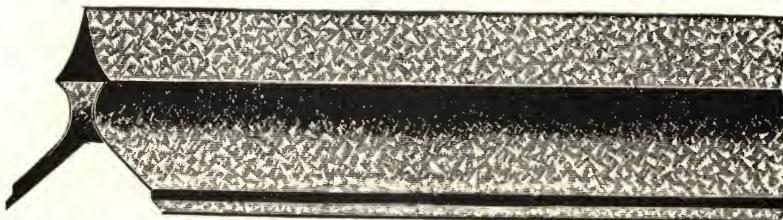
**No. 2**

Height 4½ inches, apron 2½ inches, girth 12 inches, price, per foot.....	\$0.30
Height 6 inches, apron 3 inches, girth 15 inches, price, per foot.....	.37
Height 8 inches, apron 4½ inches, girth 20 inches, price, per foot.....	.50

**No. 3**

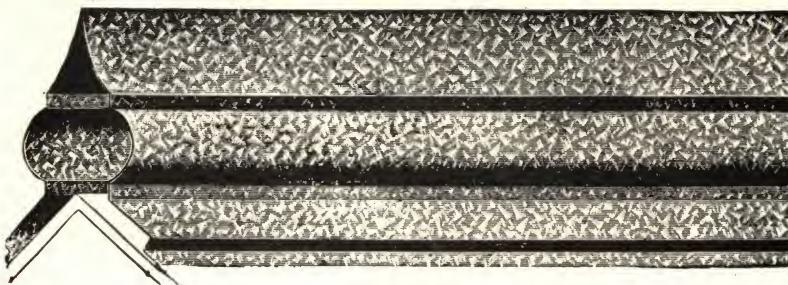
Height 6 inches, apron 3 inches, girth 15 inches, price, per foot.....	\$0.37
Height 8 inches, apron 4 inches, girth 20 inches, price, per foot.....	.50
Height 10 inches, apron 4½ inches, girth 24 inches, price, per foot.....	.60

GALVANIZED RIDGINGS



No. 4

Height 6½ inches, apron 3 inches, girth 15 inches, price, per foot.....	\$0.37
Height 8 inches, apron 4 inches, girth 20 inches, price, per foot.....	.50
Height 10 inches, apron 4½ inches, girth 24 inches, price, per foot.....	.60



No. 4½

Height 8 inches, apron 4½ inches, girth 20 inches, price, per foot.....	\$0.52
Height 9½ inches, apron 5 inches, girth 24 inches, price, per foot.....	.62
Height 12 inches, apron 6½ inches, girth 30 inches, price, per foot.....	.77

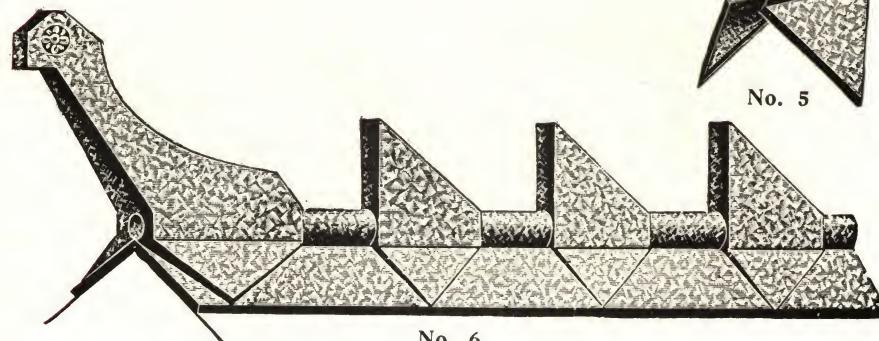
Discount on Ridgings.....per cent.

CRESTING BLOCKS AND FINIALS

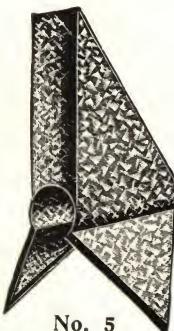
Galvanized iron to fit 2-inch ridge roll. Size 6 inches long, 5 inches high above roll.

Can be adjusted to make various designs.

They need no soldering; simply nailed through the flange.

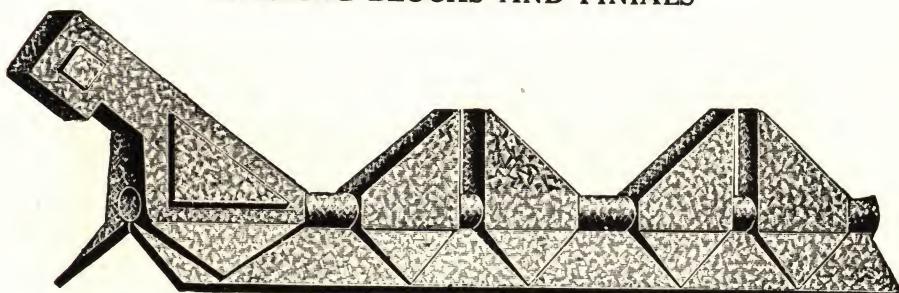


No. 6

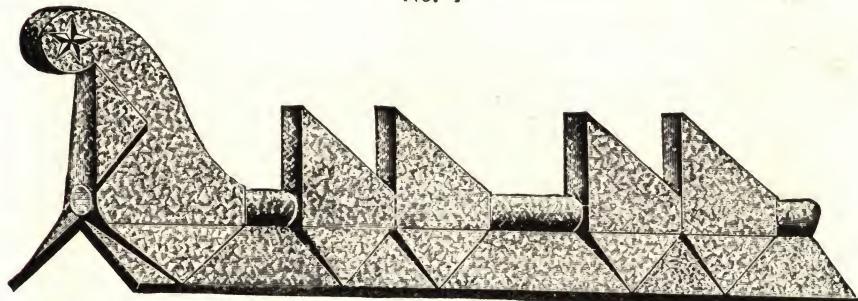


No. 5

CRESTING BLOCKS AND FINIALS



No. 7



No. 8

Cresting Blocks, per 100.....	\$30.00
No. 6 Finial, 13½ inches high, each.....	1.30
No. 7 Finial, 11 inches high, each.....	1.50
No. 8 Finial, 13 inches high, each.....	1.80

Discount.....per cent.

“LITTLE BEAUTY” FINIALS



B

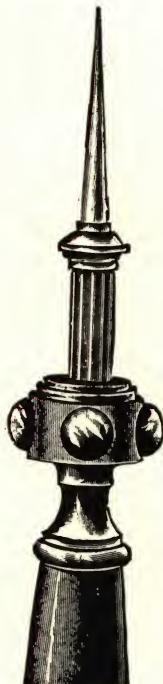
C

The base is so constructed that they will fit either 1½ inch or 2 inch Ridge Roll and fit so snugly that soldering is not required. A metal tongue extends down from the base in front, covering the end of the roll, and through which a nail can be driven into the facia board. They are 9 inches high, 10 inches long at the base.

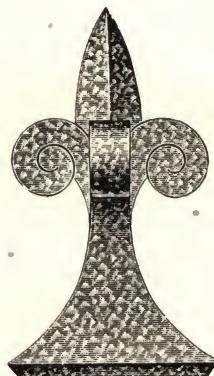
Style B, price each.....	\$0.72
Style C, price each.....	.80

Discount.....per cent.

FINIALS



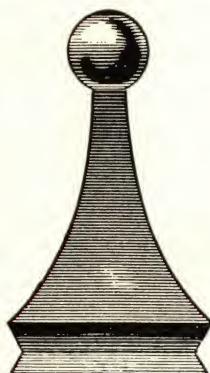
No. 9



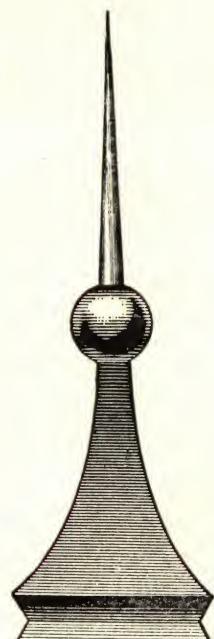
No. 10



No. 11



No. 12



No. 13



No. 14

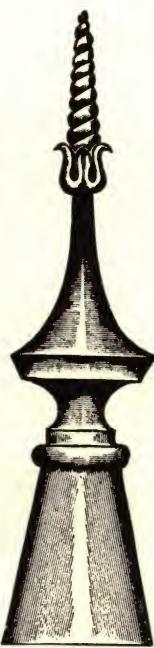
No. 9	Height 3½ feet	Price each.....	\$ 9.00
No. 10	Height 2¾ feet	Price each.....	6.00
No. 11	Height 3½ feet	Price each.....	11.00
No. 12	Height 1¼ feet	Price each.....	3.50
No. 13	Height 2¼ feet	Price each.....	5.50
No. 14	Height 3⅓ feet	Price each.....	6.00

Discount.....per cent.

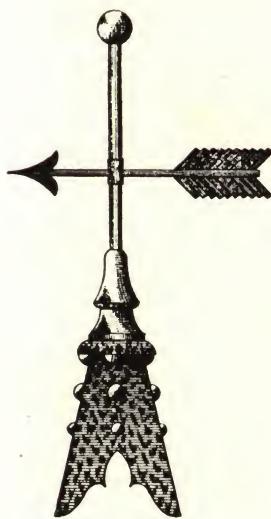
FINIALS



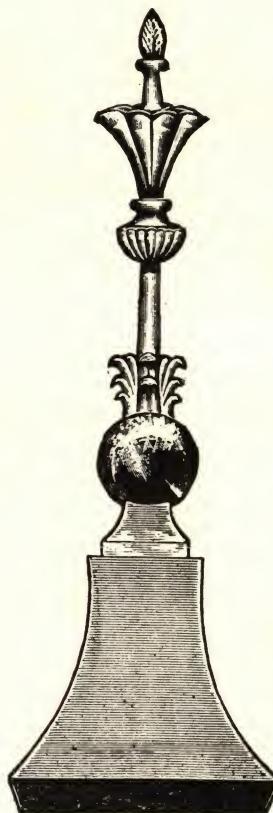
No. 15



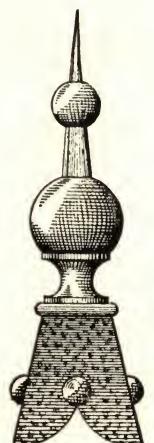
No. 17



No. 18



No. 16



No. 19

No. 15	Height 2 feet	Price each.....	\$ 4.50
No. 16	Height 4½ feet	Price each.....	11.00
No. 17	Height 3½ feet	Price each.....	8.00
No. 18	Height 3¾ feet	Price each.....	7.00
No. 19	Height 3 feet	Price each.....	6.00

Discount.....per cent.

CONDUCTOR PIPE
GALVANIZED STEEL, GALVANIZED CHARCOAL IRON AND
TONCAN METAL
Made in 10-foot Lengths



Round Corrugated Expanding Pipe



Square Corrugated Expanding Pipe



Plain Round Pipe

Packed in skeleton crates. All sizes from 2 to 6 inches can be nested in one crate.

List Prices

STANDARD GAUGE				HEAVIER GAUGES			
Size Inches	Round Cor., per ft.	Sq. Cor. per ft.	Plain Round per ft.	Add to List Prices			
1½	\$....	\$....	\$0.11	No. 27	.....	\$0.04	
2	.13	.14	.13	No. 26	.....	.06	
2½	....	....	.14	No. 24	.....	.12	
3	.15	.16	.15				
3½	....	....	.18				
4	.20	.21	.20				
5	.25	.26	.25				
6	.30	.31	.30				

Discount Galvanized Steel.....per cent.

Discount Galvanized Charcoal Iron.....per cent.

Discount Galvanized Toncan Metal.....per cent.

Galvanized Pipe heavier than No. 26 will be shipped in 8-foot lengths unless ordered otherwise.

Galvanized Round Corrugated will always be shipped unless ordered otherwise.

Galvanized Steel will be shipped unless specifically ordered "Galvanized Charcoal Iron" or "Toncan Metal."

CONDUCTOR PIPE—Cold Rolled Copper

Size, in.....	PLAIN ROUND AND CORRUG. ROUND					SQUARE			
	1½ & 2	2½ & 3	3½ & 4	4½ & 5	6	2	3	4	5
14 oz.....	.40	.50	.65	.85	1.00	.42	.52	.67	.87
16 oz.....	.43	.54	.70	.92	1.08	.45	.56	.72	.94
20 oz.....	.54	.67	.88	1.15	1.35	.56	.70	.90	1.18

Note—The standard measurements of Square Pipe are as follows:

2 inch = 1½ x 2½; 3 inch = 2½ x 3½; 4 inch = 2¾ x 4¼; 5 inch = 3¾ x 5.

Discount Copper.....per cent.

DISCOUNT SHEET
GALVANIZED CONDUCTOR PIPE

Using Plain Round and Round Corrugated Lists—Showing Net Prices per 100
on Each Size at Various Discounts

SIZE	2-inch per 100 ft.	3-inch per 100 ft.	4-inch per 100 ft.	5-inch per 100 ft.	6-inch per 100 ft.
List.	\$13.00	\$15.00	\$20.00	\$25.00	\$30.00
80-25-5%	\$1.85	\$2.14	\$2.85	\$3.56	\$4.27
85-5	1.85	2.14	2.85	3.56	4.27
80-10-10-10	1.90	2.19	2.92	3.64	4.37
80-20-5-2½	1.93	2.22	2.96	3.70	4.45
80-25	1.95	2.25	3.00	3.75	4.50
85	1.95	2.25	3.00	3.75	4.50
80-20-5	1.98	2.28	3.04	3.80	4.56
80-10-10-5	2.00	2.31	3.08	3.85	4.62
80-10-10-2½	2.06	2.37	3.16	3.95	4.74
80-20	2.08	2.40	3.20	4.00	4.80
80-10-10	2.11	2.43	3.24	4.05	4.86
80-10-5-2½	2.16	2.50	3.33	4.16	5.00
80-10-5	2.22	2.56	3.42	4.27	5.13
80-10-2½	2.27	2.63	3.51	4.39	5.26
80-10	2.34	2.70	3.60	4.50	5.40
80-5-2½	2.41	2.78	3.70	4.63	5.56
80-5	2.47	2.85	3.80	4.75	5.70
80-2½	2.53	2.92	3.90	4.87	5.85
80	2.60	3.00	4.00	5.00	6.00
75-10-10	2.63	3.03	4.05	5.06	6.07
75-10-5-2½	2.70	3.12	4.16	5.21	6.25
75-15	2.76	3.19	4.25	5.31	6.38
75-10-5	2.77	3.20	4.27	5.34	6.41
75-12½	2.84	3.28	4.37	5.47	6.56
75-10-2½	2.85	3.29	4.39	5.48	6.58
75-10	2.92	3.37	4.50	5.62	6.75
75-7½	3.01	3.47	4.62	5.78	6.94
75-5-2½	3.01	3.47	4.63	5.79	6.94
75-5	3.09	3.56	4.75	5.94	7.12
75-2½	3.17	3.66	4.87	6.09	7.31
75	3.25	3.75	5.00	6.25	7.50
70-15	3.31	3.83	5.10	6.38	7.65
60-25-15	3.32	3.83	5.10	6.38	7.65
70-12½	3.41	3.94	5.25	6.56	7.87
60-25-12½	3.41	3.94	5.25	6.56	7.87
70-10	3.51	4.05	5.40	6.75	8.10
60-25-10	3.51	4.05	5.40	6.75	8.10
70-7½	3.61	4.16	5.55	6.94	8.32
70-5	3.70	4.27	5.70	7.12	8.55
60-25-5	3.70	4.27	5.70	7.12	8.55
70-2½	3.80	4.39	5.85	7.31	8.77
60-25-2½	3.80	4.39	5.85	7.31	8.77
70	3.90	4.50	6.00	7.50	9.00
60-20-5	3.95	4.56	6.08	7.60	9.12
60-22½	4.03	4.65	6.20	7.75	9.30
60-20-2½	4.06	4.68	6.24	7.80	9.36
60-20	4.16	4.80	6.40	8.00	9.60
60-17½	4.29	4.95	6.60	8.25	9.90
60-15	4.42	5.10	6.80	8.50	10.20
60-12½	4.55	5.25	7.00	8.75	10.50
60-10-2½	4.56	5.27	7.02	8.77	10.53
60-10	4.68	5.40	7.20	9.00	10.80
60-7½	4.81	5.55	7.40	9.25	11.10
60-5	4.94	5.70	7.60	9.50	11.40
60-2½	5.07	5.85	7.80	9.75	11.70
60	5.20	6.00	8.00	10.00	12.00

GALVANIZED ELBOWS AND SHOES

Please order by pattern number to indicate the angle wanted.
All our pipe and elbows are perfectly uniform and true.

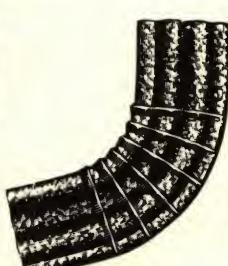
ROUND CORRUGATED ELBOWS



No. 1



No. 2



No. 3



No. 4 or Shoe

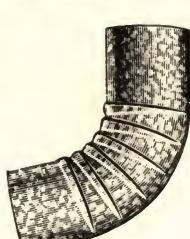
PLAIN ROUND ELBOWS



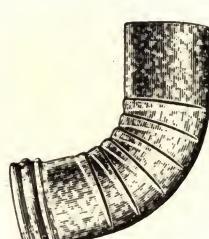
No. 1



No. 2



No. 3



No. 4 or Shoe

SQUARE CORRUGATED ELBOWS



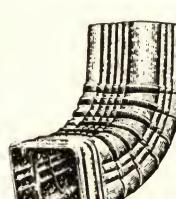
No. 1A



No. 2A

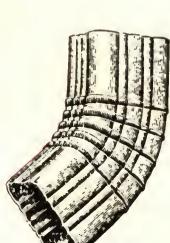


No. 3A

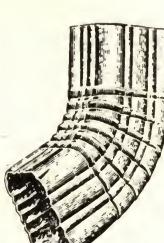


No. 4A

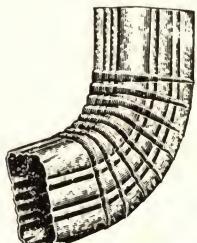
Style A elbows are bent the wide way of the pipe.
Unless otherwise ordered, Style A elbows are shipped.



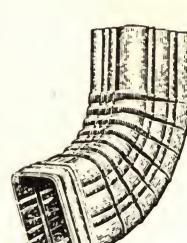
No. 1B



No. 2B



No. 3B



No. 4B or Shoe

Style B elbows are bent the narrow way of the pipe.

PRICE LIST**ROUND CORRUGATED AND PLAIN ROUND ELBOWS AND SHOES**

Size	Galv'd Steel or Tin		Galv'd C. C. Iron		14 Oz. Copper		16 Oz. Copper	
	Elbows	Shoes	Elbows	Shoes	Elbows No. 0-1-2-3	Shoes and No. 4 Elbs.	Elbows No. 0-1-2-3	Shoes and No. 4 Elbs.
2 -inch List, each....	\$0.25	\$0.36	\$0.40	\$0.50	\$0.70	\$0.75	\$0.75	\$0.85
2½-inch List, each....	.30	.45	.45	.60	.90	1.00	1.00	1.10
3 -inch List, each....	.30	.45	.45	.60	.90	1.00	1.00	1.10
3½-inch List, each....	.60	.75	.75	.90	1.35	1.50	1.50	1.65
4 -inch List, each....	.60	.75	.75	.90	1.35	1.50	1.50	1.65
5 -inch List, each....	1.25	1.50	1.20	1.50	2.00	2.25	2.25	2.50
6 -inch List, each....	1.50	1.80	1.40	1.70	2.85	3.15	3.15	3.50

SQUARE CORRUGATED ELBOWS AND SHOES

Size	Galv'd Steel or Tin		Galv'd C. C. Iron		14 Oz. Copper		16 Oz. Copper	
	Elbows	Shoes	Elbows	Shoes	Elbows No. 0-1-2-3	Shoes and No. 4 Elbs.	Elbows No. 0-1-2-3	Shoes and No. 4 Elbs.
2-inch List, each....	\$0.40	\$0.48	\$0.60	\$0.72	\$0.85	\$0.90	\$0.90	\$1.05
3-inch List, each....	.45	.54	.67	.81	1.10	1.20	1.20	1.35
4-inch List, each....	.60	.72	.90	1.08	1.60	1.80	1.80	2.00
5-inch List, each....	.90	1.08	1.35	1.62	2.40	2.75	2.75	3.00

Discount { Galvanized per cent.
 Copper per cent.
 Charcoal Iron per cent.

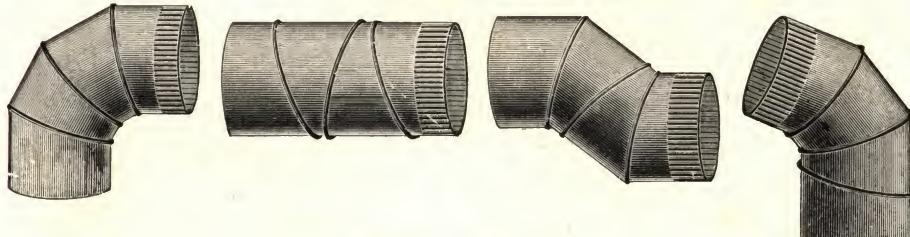
TONCAN METAL ELBOWS AND SHOES**List Prices**

Inches	2	3	4	5	6
Corrugated and Plain Round Elbows, each....	\$0.40	\$0.45	\$0.75	\$1.20	\$1.40
" " Shoes, each....	.50	.60	.90	1.50	1.70
" Square Elbows, each....	.60	.67	.90	1.35	.....
" " Shoes, each....	.72	.81	1.08	1.62	.....

Discount

Less than 25 dozen in one shipment per cent.
 25 dozen or over in one shipment per cent.

Freight allowed to all points in northeastern, eastern, central, northwestern, western and Tennessee territories in 15 dozen lots or more.

ADJUSTABLE ELBOWS**Price per Dozen**

Inches	2	3	4	5	6
Tin, per dozen	\$1.80	\$2.40	\$3.60	\$4.80	\$6.60
Galvanized, per dozen	2.40	3.60	4.80	6.60	8.40

For 7-inch Adjustable Elbows and larger Galvanized or Tin, see list prices, page 219.

Discount { Galvanized per cent.
 Tin per cent.

CAST IRON BOOTS AND SEWER CONNECTIONS

For all Standard Shapes and Sizes of Pipe Carefully Moulded, Smooth Finished, Carefully Inspected



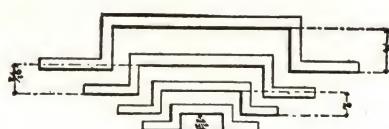
PRICE LIST—All 4½ Feet Long

For other than standard lengths figure same rate per foot plus 20 per cent for alteration of patterns.

Nos. H & G, each
3 inch, \$3.20
4 inch, 4.00
5 inch, 4.70
6 inch, 6.00

Nos. D & C, each
\$3.40
4.20
5.20
6.20

Nos. F & E, each
\$3.60 size 2½ x 3¼ inch
4.40 size 2½ x 4¼ inch
5.40 size 3¾ x 5 inch
6.40 size 5 x 6 inch



End view of Brackets, 1½, 2, 2½ and 3 inches from wall.

CAST IRON SOIL PIPE AND FITTINGS**SINGLE HUB PIPE****Plate 1**

Size	Inches	2	3	4	5	6	7	8	10	12	15
Standard	Per Ft.	\$.24	\$.32	\$.40	\$.60	\$.70	\$1.00	\$1.25	\$2.00	\$3.00	\$4.50
Medium ... "		.32	.50	.68	.90	1.05	1.50	1.90	2.65		
Extra heavy .. "		.35	.65	.80	1.15	1.30	1.75	2.25	3.00	4.00	6.00

AVERAGE WEIGHT—PER LENGTH

Size	Inches	2	3	4	5	6	7	8	10	12
Standard	Pounds	18	23	33	43	53	75	90	130	170
Medium	"	20	30	45	60	75	100	125	175	
Extra heavy	"	27½	47½	65	85	100	135	170	225	270

QUARTER BEND

Size	Standard	Extra Heavy
2-inch	\$.40	\$.50
3-inch .....	.65	.95
4-inch .....	.80	1.15
5-inch	1.50	2.00
6-inch	2.00	2.75
7-inch	2.25	3.00
8-inch	3.00	4.00
10-inch	4.00	5.00
12-inch	6.00	8.00
15-inch	10.00	

Plate 3

Discount.....per cent.



In presenting to architects, builders, and owners of buildings the Patent Polygon Sheetmetal Conductor Pipe, we feel confident that its merits are shown sufficiently bold in the adjoining cut not to require a long description.

The pipe is expansive. Through its peculiar polygon scalloped spiral construction, producing sufficient expansion and resistance, an artistic effect is also secured not possessed by any other conductor pipe in the market.

Ice forming in it will not, by slipping, as in other conductors, burst joints and seams, but will descend gradually without injury to the pipe. Water in heavy rains will discharge more freely, as the pipe will not choke.

Considering quality of material used, which is Galvanized **American Ingot Iron**, and workmanship required in producing the pipe, also the durability and design obtained, the Patent Polygon is the cheapest in the market.

GALVANIZED IRON AND COPPER

PRICE LIST OF POLYGON PIPE

	No. 28 Galv. Iron per foot	14 oz. Copper per foot	16 oz. Copper per foot
2 in. pipe....	\$0.15	\$0.45	\$0.48
3 in. pipe....	.17	.56	.60
4 in. pipe....	.23	.72	.77
5 in. pipe....	.28	.93	1.00
6 in. pipe....	.34	1.10	1.18

Discount.....



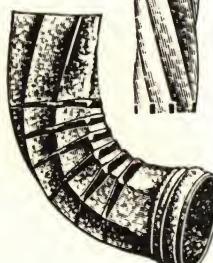
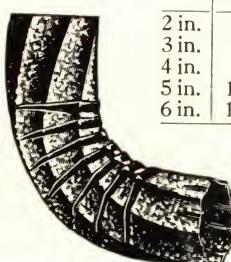
FLAT CRIMP POLYGON ELBOWS

PRICE LIST

	GALV. INGOT IRON		COPPER			
	Elbows Piece	Shoes Piece	Elbows Piece	Shoes Piece	Elbows Piece	Shoes Piece
2 in.	.60	.72	.85	.90	.90	1.05
3 in.	.67	.81	1.10	1.20	1.20	1.35
4 in.	.90	1.08	1.60	1.80	1.80	2.00
5 in.	1.35	1.62	2.40	2.75	2.75	3.00
6 in.	1.70	2.00	3.40	3.75	3.75	4.20

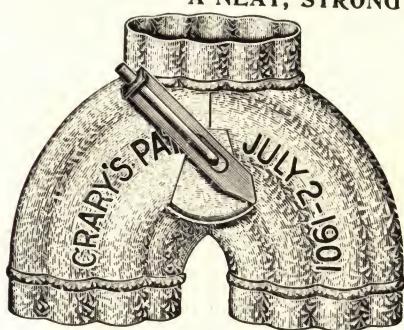
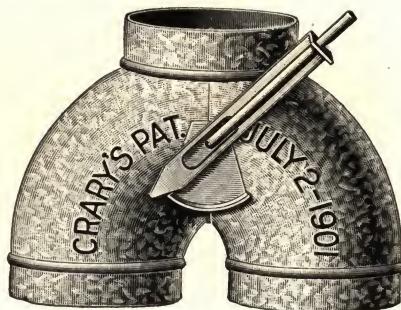
Discount.....

Made in Four Angles.



The ends of this elbow are scalloped, so as to fit the Polygon Pipe more perfectly.

CRARY'S PATENT CUT-OFF
A NEAT, STRONG AND DURABLE CUT-OFF

**Corrugated****Plain Round**

We carry in stock 2, 3, 4, 5 inch Plain Round and 3 and 4 inch Corrugated Crary's Cut-Off Galvanized.

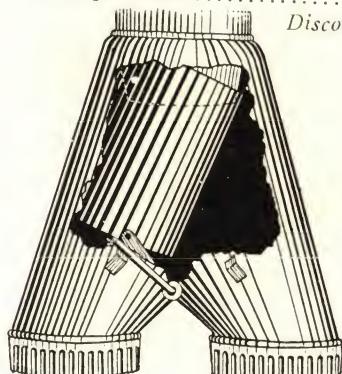
List prices same as Perfection Galvanized Cut-Off.

Discount.....per cent.

**PERFECTION CUT-OFF**

	Tin	Galvanized
2 inch, per dozen.....	\$ 5.00	\$ 7.00
3 inch, per dozen.....	6.00	8.00
4 inch, per dozen.....	9.00	11.00
5 inch, per dozen.....	14.00	20.00
6 inch, per dozen.....	20.00	30.00

Discount.....per cent.

**PEERLESS CUT-OFF**

	Tin	Galvanized
2 inch	\$ 6.00	\$ 8.00
3 inch	6.00	8.00
4 inch	9.00	11.00
5 inch	14.00	20.00
6 inch	20.00	30.00

Discount.....per cent.

TWO-PIECE MITRES

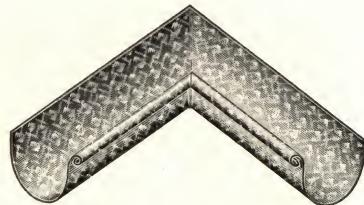
Great care is taken in the manufacturing of our two-piece, double-seamed mitres—each mitre fits perfectly tight and will not break or bend even with a heavy pressure.

Exactness is the motto in our Mitre Shop and a glance at the mitres we turn out will show you how we live up to our motto.

You can't go astray, if it's made our way.



Outer Corner



Inner Corner

These Mitres are made complete, ready for use, for both inside and outside bead, either slip or lap joint.

Price List—Galvanized Steel

		Slip Joint	Lap Joint
3	inch, per dozen.....	\$2.75	\$2.25
3½	" " "	3.00	2.50
4	" " "	3.25	2.75
5	" " "	3.50	3.00
6	" " "	4.00	3.50
7	" " "	4.75	4.25

When ordering Slip Joint Mitres, state whether right or left hand is wanted, and whether for "Inside" or "Outside" Corner; otherwise half rights and half lefts and half "Inside" and half "Outside" Corner Mitres will be supplied.

Note—For Double Bead Mitres, add 50 cents per dozen to above list.

Discount.....per cent.

EAVES TROUGH FITTINGS AND ACCESSORIES, OUTLETS, END CAPS, TUBES AND CONNECTIONS

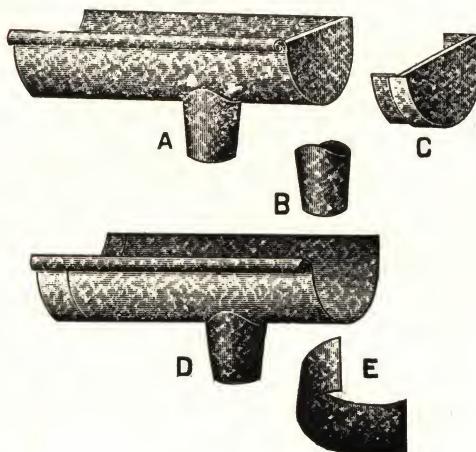
"A"—Outlet with Tube. Single or double bead; always made lap joint.

"B"—Tube.

"C"—End Cap. Fits either single or double bead Eaves Trough.

"D"—Open End Outlet. Single or double bead; always made slip joint.

"E"—Slip Joint Connection. Fits either single or double bead Eaves Trough.



Price List Per Dozen

Size Inches	12-inch End Pieces		"B" Drops Only	"C" Ends Only	"E" Con- nection
	"A" Com- plete	"D" With- out C Ends			
2	\$....	\$....	\$0.60	\$....	\$....
2½	.....	.....	.65	.....	.....
3	.....	.....	.75	.95	.95
3½	2.80	1.85	.80	.95	.95
4	3.10	2.00	.85	1.10	1.10
5	3.45	2.25	.95	1.20	1.20
6	4.15	2.70	1.20	1.45	1.45
7	4.70	3.00	.....	1.70	1.70
8	5.25	3.15	.....	2.10	2.10

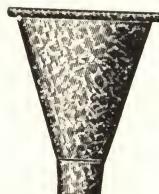
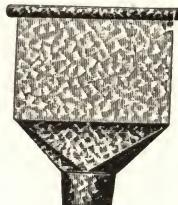
For Double Bead A and D End Pieces add 50 cents per dozen to above list.

Write for discount

CONDUCTOR HEADS

Made of Best Bloom—Galvanized Steel

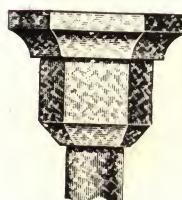
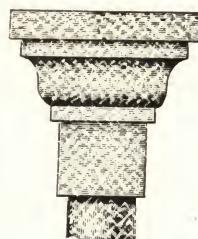
Prices on copper, Toncan metal, charcoal iron heads quoted on application.
We make a specialty of making conductor heads from architect drawings.

No. 1**No. 2****No. 3**

For 3 in. pipe.....\$0.24
For 4 in. pipe..... .36
For 5 in. pipe..... .48

For 3 in. pipe.....\$1.00
For 4 in. pipe..... 1.25
For 5 in. pipe..... 1.50

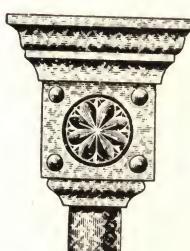
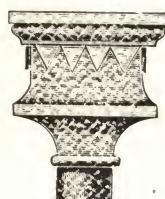
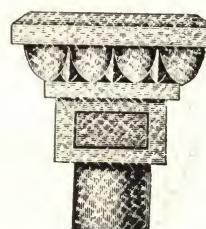
For 3 in. pipe.....\$1.25
For 4 in. pipe..... 1.50
For 5 in. pipe..... 1.75

No. 4**No. 5****No. 6**

For 3 in. pipe.....\$1.50
For 4 in. pipe..... 1.75
For 5 in. pipe..... 2.00

For 3 in. pipe.....\$1.75
For 4 in. pipe..... 2.00
For 5 in. pipe..... 2.25

For 3 in. pipe.....\$1.25
For 4 in. pipe..... 1.50
For 5 in. pipe..... 1.75

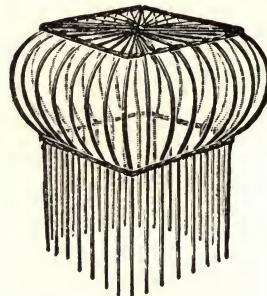
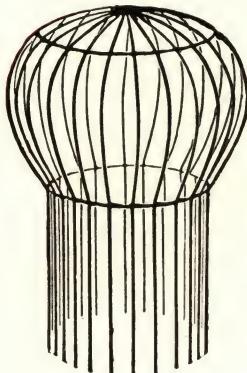
No. 7**No. 8****No. 9**

For 3 in. pipe.....\$2.25
For 4 in. pipe..... 2.75
For 5 in. pipe..... 3.25

For 3 in. pipe.....\$2.50
For 4 in. pipe..... 3.00
For 5 in. pipe..... 3.50

For 3 in. pipe.....\$2.50
For 4 in. pipe..... 3.00
For 5 in. pipe..... 3.50

Write for discount

WHITE CONDUCTOR STRAINERS**Galvanized and Copper—Round and Square****All Sizes in Stock**

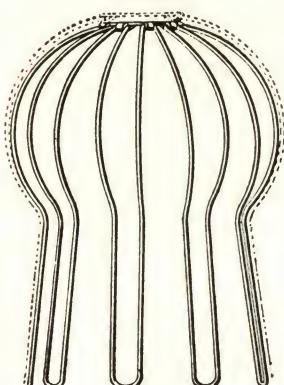
	Galvanized	Copper
Round		
2-inch, per dozen.....	\$1.50	\$ 2.20
3-inch, per dozen.....	2.00	3.00
4-inch, per dozen.....	3.00	4.60
5-inch, per dozen.....	5.00	9.60
6-inch, per dozen.....	6.00	11.00
Square		
2 x 3-inch, per dozen.....	\$4.25	\$ 5.00
3 x 4-inch, per dozen.....	7.25	8.00
4 x 5-inch, per dozen.....	9.00	11.00

Discount.....per cent.

We carry the leading sizes of Copper Conductor Strainers in stock.

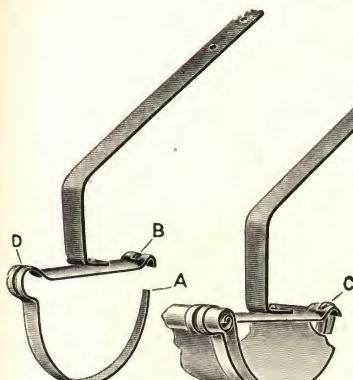
Odd sizes furnished to order promptly.

Patented

**COLEMAN'S ADJUSTABLE CONDUCTOR STRAINER**

	Per Doz.	Per Gross
No. 1 Galvanized, will fit 2 to 4 in. pipe \$.....	\$.....	\$.....
No. 2 Galvanized, will fit 5 to 6 in. pipe \$.....	\$.....	\$.....
No. 3 Copper, will fit 2 to 4 in. pipe \$.....	\$.....	\$.....
No. 4 Copper, will fit 5 to 6 in. pipe \$.....	\$.....	\$.....

NEW GOLDEN STAR HANGER



PATENT PENDING



Hanger as packed for shipment.

Roof strap No. 16 gauge galvanized. Combined cross-bar and under strap No. 18 gauge galvanized.

All roof straps of each size are of the following length: $3\frac{1}{2}$ to 5 inch, 10 inches long; 6 and 7 inch, 13 inches long; 8 inch, 14 inches long.

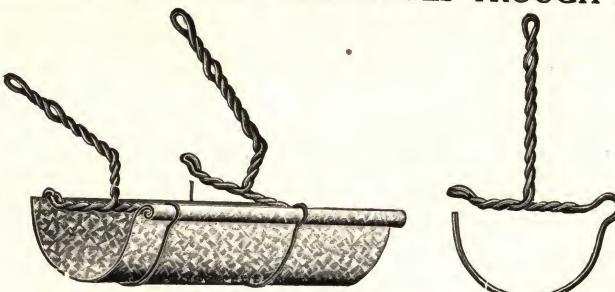
Packed one gross in a box.

List Prices

	Per Gross
3 $\frac{1}{2}$ inch, shipping weight 36 lbs.	\$ 5.00
4 inch, shipping weight 38 lbs.	5.35
4 $\frac{1}{2}$ inch, shipping weight 40 lbs.	5.70
5 inch, shipping weight 42 lbs.	5.70
6 inch, shipping weight 70 lbs.	10.00
7 inch, shipping weight 77 lbs.	13.00
8 inch, shipping weight 83 lbs.	17.00

Discount.....per cent.

STANDARD AND ECLIPSE WIRE EAVES TROUGH HANGERS



Cheap and Strong. No Solder Required.

The Eclipse Hangers are double strength, having three strands in the cross-bar.

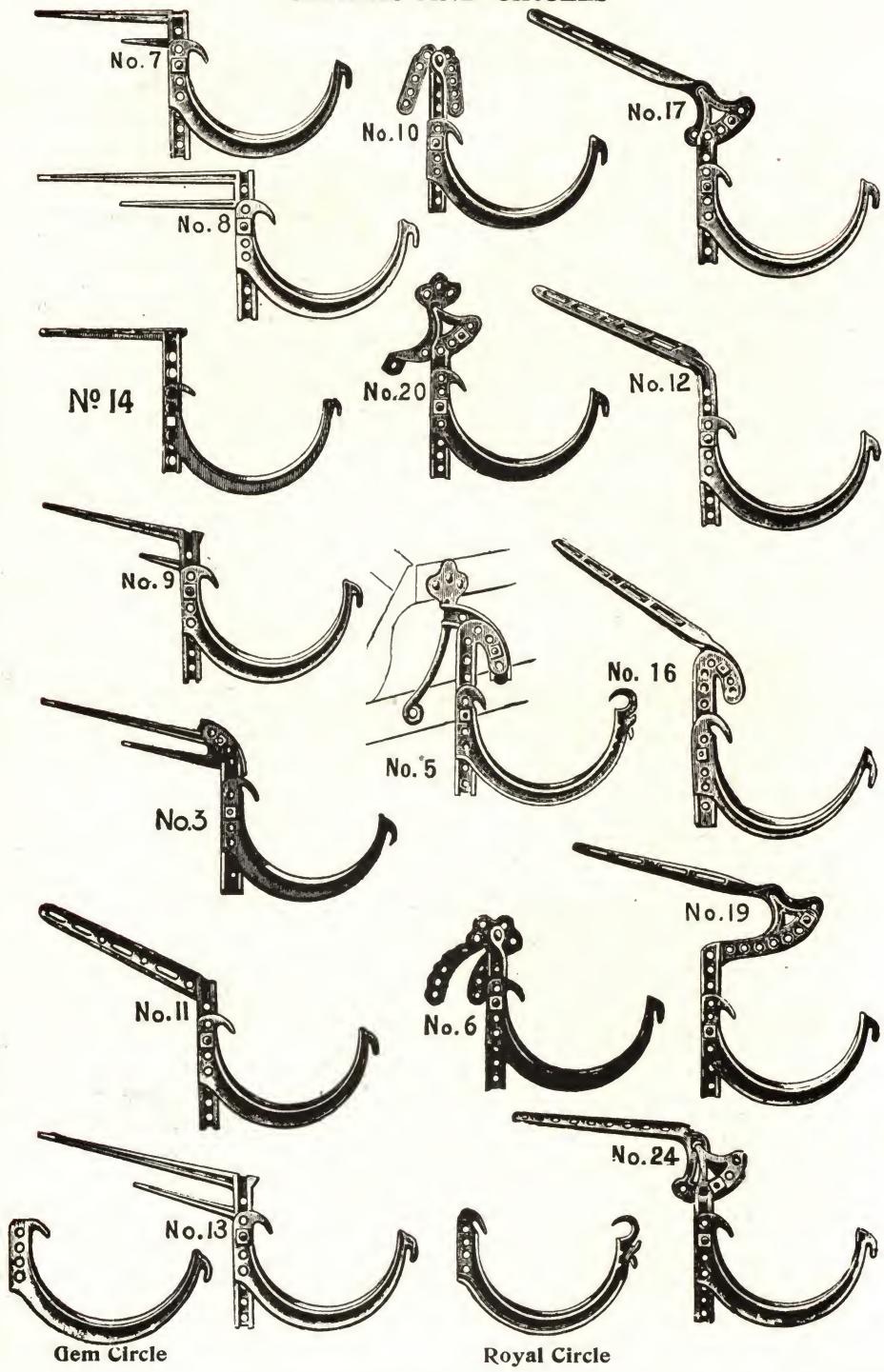
Price List

	Standard Per Gross	Eclipse Per Gross
3 inch for $\frac{3}{8}$, $\frac{1}{2}$ or $\frac{5}{8}$ inch bead.	\$	\$
3 $\frac{1}{2}$ inch for $\frac{3}{8}$, $\frac{1}{2}$ or $\frac{5}{8}$ inch bead.	\$	\$
4 inch for $\frac{3}{8}$, $\frac{1}{2}$ or $\frac{5}{8}$ inch bead.	\$	\$
4 $\frac{1}{2}$ inch for $\frac{3}{8}$, $\frac{1}{2}$ or $\frac{5}{8}$ inch bead.	\$	\$
5 inch for $\frac{3}{8}$, $\frac{1}{2}$ or $\frac{5}{8}$ inch bead.	\$	\$
6 inch for $\frac{3}{8}$, $\frac{1}{2}$ or $\frac{5}{8}$ inch bead.	\$	\$

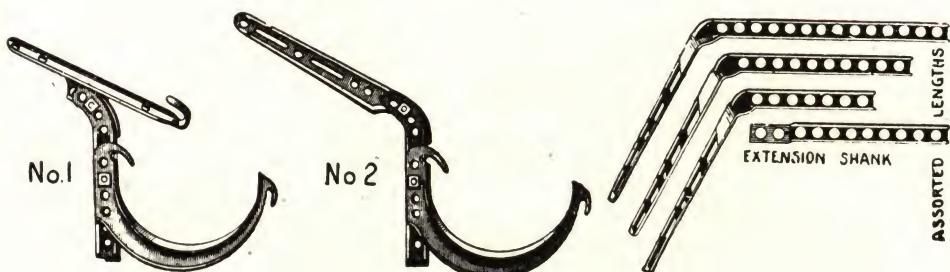
Double bead, 25 cents per gross extra.

Packed one gross in a box. In ordering state size of bead wanted. If no size is specified $\frac{1}{2}$ inch will be sent.

SHANKS AND CIRCLES



BERGER GUTTER HANGERS



SHANKS—Per 100

	Plain Black	Tinned
Nos. 7, 9.....	\$ 2.00	\$ 2.50
Nos. 8, 10, 11, 13.....	3.00	3.75
Nos. 6, 12, 14, 15, 20, 25.....	3.50	4.40
Nos. 2, 3, 5.....	4.00	5.00
Nos. 1, 16, 17.....	5.00	6.25
No. 19, with bolt for hinge.....	6.00	7.50
No. 16, extra heavy shanks, complete.....	10.00	12.50
Extension shank with bolt.....	2.00	2.50
Stems only, Nos. 1, 2, 3, 5, 16, 17, 20.....	2.00	2.50
Stems only, No. 19.....	2.50	3.10
All long shanks—Nos. 7, 8, 9, 11, 12, 25, add to list.....	1.00	1.25
All long shanks—Nos. 6, 10.....	.50	.65

Other numbers are not made to furnish all long. When they are required longer than the regular style, use Extension Shanks.

One bolt included with each Hinged Shank.

GEM AND PENN CIRCLES—Per 100

With Bolts and Straps

	Plain Black	Tinned
3, 3½, 4-inch.....	\$ 2.00	\$ 2.50
4½, 5-inch	3.00	3.75
6-inch	4.00	5.00
7-inch	5.00	6.25
8-inch	6.00	7.50

Adjustable Style

8-inch	7.00	8.75
9-inch	9.00	11.25
10-inch	10.00	12.50
12-inch (not made for double bead).....	12.00	15.00

ROYAL CIRCLES—Per 100

	Plain Black	Tinned
3½, 4-inch	\$ 3.00	\$ 3.75
4½, 5-inch	3.50	4.40
6-inch	4.50	5.65

Additional Bolts and Straps are charged extra.

Discount.....per cent.

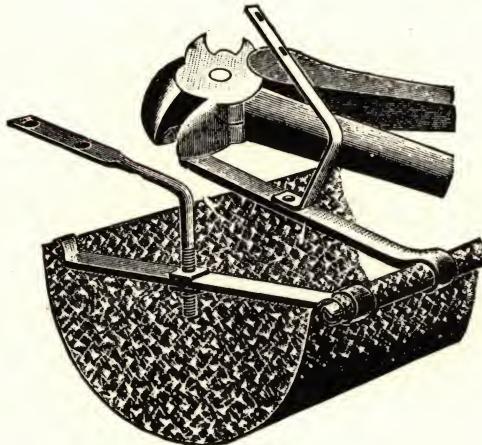
Always state number of Shank wanted.

Always state Kind and Size of Circle wanted.

When Tinned Hangers are wanted do not fail to so specify.

Solid Brass Hangers quoted on application.

HARMAN ROD AND NUT, AND STRAP HANGER



Price List, Per Gross

	With Rods	With Straps
3 inch	\$3.75	\$3.50
3½ inch	4.00	3.50
4 inch	4.25	3.75
4½ inch	4.35	3.85
5 inch	4.50	4.00
6 inch	5.00	4.50
7 inch	6.00	5.50
8 inch	8.00	7.50

Double Bead Hangers 25 cents per gross to list.

Crossbars can be furnished separately if desired, either japanned or tinned. Prices on application.

N. B.—Sizes taken inside of bead. In ordering always state size of bead. Hangers are always sent with rods unless otherwise ordered.

Discount.....per cent.

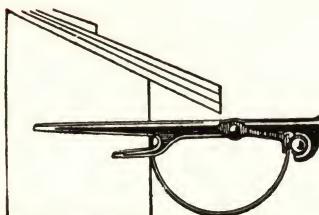
EAVES TROUGH HANGER RODS



¼ inch diameter—7, 9, 10 and 11 inches long, per gross.....\$2.25

Discount.....per cent.

GUTTER SPIKES



Where this can be used there is nothing handier or stronger—a first-class ice breaker, and just the thing for O. G. or square gutter.

Per 100—Black

Inches	4	$4\frac{1}{2}$	5	6
Short drive, No. 1.....	\$3.00	3.50	4.00	4.50
Long drive, No. 2.....	4.00	4.50	5.00	5.50

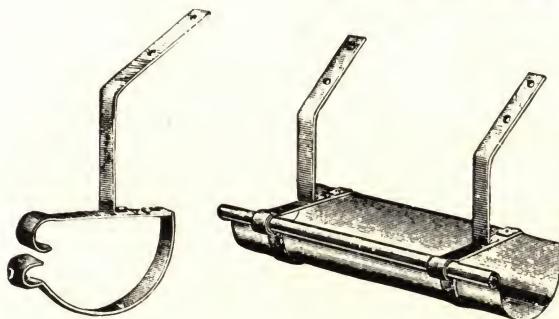
REPAIR SPIKES



Per 100—Black

Inches	7	9	12
For ½-inch bead.....	\$2.50	3.00	4.00

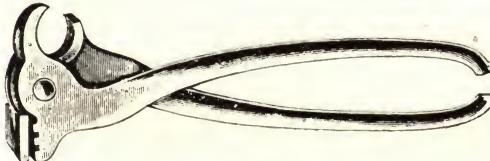
A handy article to straighten up twisted gutter.

BAKER'S STRAP HANGER**Sold in Gross Lots Only**

The strap that goes underneath the gutter is of heavy galvanized iron, the balance of the Hanger is of strong hoop iron. The straps that fasten to the roof are sent in nine different lengths. The pitch of the gutter is easily regulated.

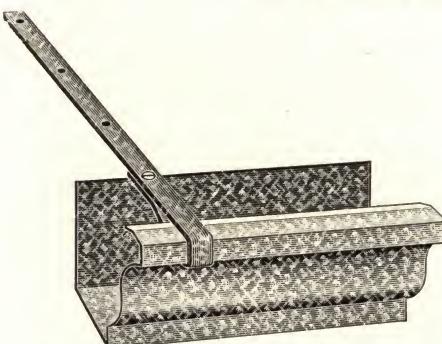
Price Per Gross

	Black	Galvanized
5-inch and smaller, per gross.....	\$2.50	\$4.00
Larger than 5 inches, per gross.....	3.00	5.00

*Discount.....per cent.***HANGER TONGS****For Clinching Hangers**

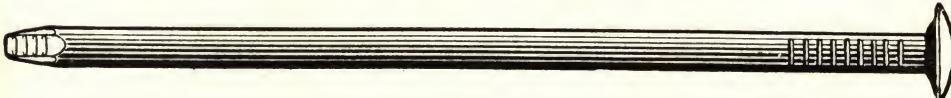
A handy valuable tool for many other purposes.

Price \$0.30

O. G. GUTTER HANGERS

Made from heavy galvanized band iron and specially adapted for moulded gutter. Furnished for either round or square bead.

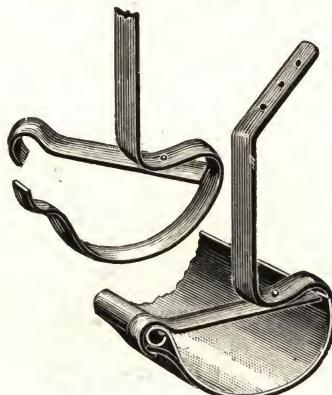
Price, each \$.....

O. G. GUTTER SPIKES

Furnished 6, 7, 8, 9 inches in length, per 100 pounds..... \$.....

OATMAN'S EAVE TROUGH HANGERS

Adjustable Wrought Steel



This Hanger fits either Tin or Galvanized Trough. Packed 100 in a box, assorted lengths of stem, except sizes 6, 7, 8 inch, which are packed 50 in a box.

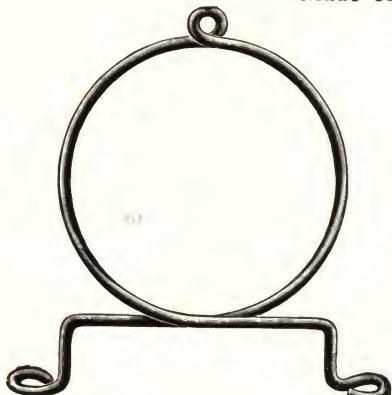
Size	Girth of Gutter	Standard Size of Bead		List Price per 100
3½ inches	7 inches	½ inch	.....	\$ 5.00
3¾ inches	7½ inches	½ inch	.....	5.00
4 inches	8 inches	½ inch	.....	5.75
5 inches	10 inches	½ inch	.....	6.50
6 inches	12 inches	5/8 inch	.....	8.50
7 inches	14 inches	¾ inch	.....	12.00
8 inches	16 inches	¾ inch	.....	14.00

Tongs for bending, per pair.....\$0.80

Discount.....per cent.

IWAN'S PERFECTION WIRE CONDUCTOR PIPE HANGERS

Made of Galvanized Wire



For 2 inch corrugated pipe 2½ inch hanger is required.

Other sizes run uniform.

To attach pipe with this hanger, strip it over the pipe, then nail one end of the hanger to the building. Then pull the other end of the hanger tight and nail it also. You will find that it holds the pipe very firmly on all sides where common tin strips or conductor hooks only hold it on the outside. The hanger can be tightened as desired by giving the eye a twist.

These hangers are packed in boxes of 50 each. We solicit your orders under the guarantee that they will lighten your work and make it more attractive.

Price List

Size, inches	2 inch	2½ inch	3 inch	4 inch	5 inch	6 inch
Price per 100	\$2.00	\$2.25	\$2.50	\$3.00	\$3.50	\$4.00
Gauge of Wire used	12	12	11	10	9	8

Discount.....per cent.

WROUGHT IRON CONDUCTOR HOOKS

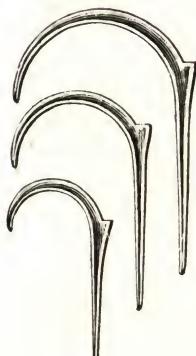


Galvanized

2 inch, per 100, net.....	\$.....
3 " " "	.....
4 " " "	.....
5 " " "	.....
6 " " "	.....

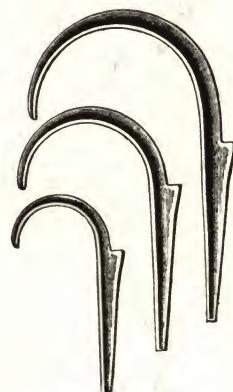
Discount.....per cent.

PLAIN SICKLE HOOKS



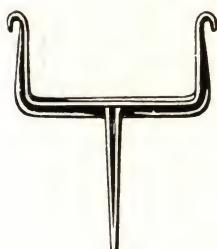
Per 100, Tinned

	For Wood	Brick
2 inch.....	\$1.50	\$1.75
2½ "	2.00	2.00
3 "	2.50	2.75
3½ "	3.00	3.50
4 "	3.50	4.25
5 "	5.00	6.00
6 "	6.00	7.50
7 " .....	.....	9.00
8 " .....	.....	10.00



Discount.....per cent.

SQUARE WIRED HOOKS



Per 100, Tinned

Inches	2	3	4	5
For wood	\$2.00	\$2.50	\$3.00	\$3.50
For brick	2.50	3.00	3.50	4.00

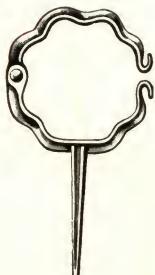
Discount.....per cent.

SELF-ACTING CORRUGATED HINGED HOOKS**Price Per 100, Tinned**

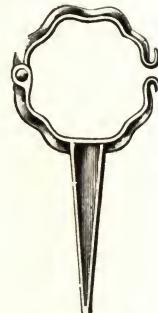
No More Wire Necessary.

For Round and Square Pipe.

	For Wood	For Brick
2 inch.....	\$3.00	\$3.50
3 inch.....	4.00	4.50
4 inch.....	5.00	5.50
5 inch.....	7.50	7.50
6 inch.....	8.50	8.50

Discount.....per cent.

For Wood

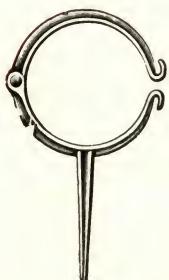


For Brick

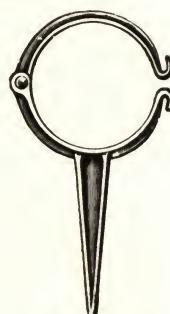
SELF-ACTING ROUND HINGED HOOKS**Price Per 100, Tinned**

For Plain Round Pipe.

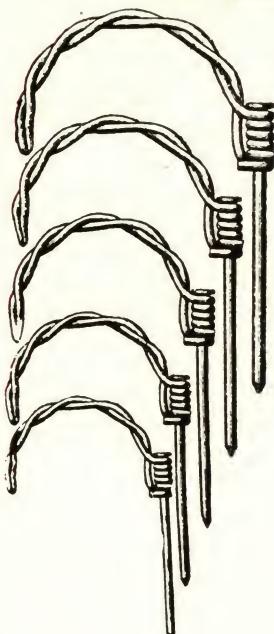
	For Wood	For Brick
2 inch.....	\$3.00	\$3.50
3 inch.....	4.00	4.50
4 inch.....	5.00	5.50
5 inch.....	7.50	7.50
6 inch.....	8.50	8.50

Discount.....per cent.

For Wood



For Brick

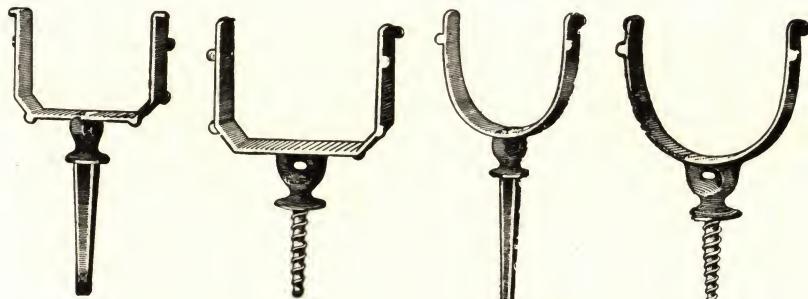
HEIB'S TWISTED WIRE HOOKS

Size	Price per 100
2 inch.....	\$1.75
2½ inch.....	2.00
3 inch.....	2.75
3½ inch.....	3.50
4 inch.....	4.25
5 inch.....	6.00

Discount.....per cent.

MINNEMEYER PATENT CONDUCTOR FASTENER

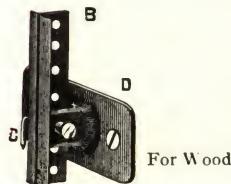
In ordering, state whether for wood or brick. If not specified, we will send for wood.

Square,
for Brick or StoneSquare,
for WoodRound,
for Brick or StoneRound,
for Wood

The Round are made in five sizes: 2, 3, 4, 5 and 6 inches.

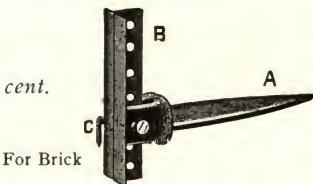
The Square are made in four sizes: 2, 3, 4 and 5 inches.

Inches	2	3	4	5	6
Price, per dozen.....	\$1.20	1.50	2.00	2.40	3.50
<i>Discount.....</i>	<i>per cent.</i>				

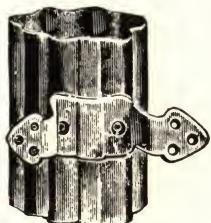
ADJUSTABLE PATENT CONDUCTOR FASTENERS

For Wood

Price per set, 10 cents.
Discount..... *per cent.*

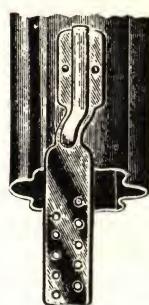


For Brick



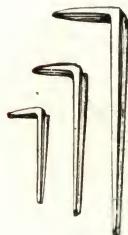
No. 3 PIPE CLEATS
Price per 100, Tinned
Especially suited for 3 and 4-inch pipe.....\$1.50

This Cleat makes a handsome finish on porch columns; no tinner should be without them; they will answer for all kinds of pipe.



No. 5 PIPE CLEATS
Price per 100, Tinned
7½ inches long.....\$2.50
This Cleat is fastened lengthwise for slipped joints and will answer for all sizes and kinds of pipe.
Put up 50 in a package.

FLASHING HOOKS



Per 100

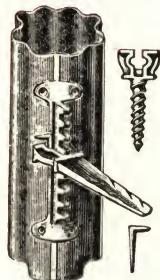
Inches	1½	2½	3½	5½	7½
Black	\$0.25	.40	.70	1.50	2.00
Tinned .....	.35	.55	1.00	2.00	2.50

Discount.....per cent.

BERGER'S PATENT PIPE FASTENER

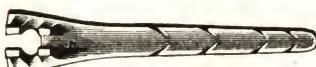
Patented April 15, 1890

Price per 100, complete



No. 0, for brick, 3 inch.....	\$3.50
No. 1, for brick or stone, 4½ inch.....	4.00
No. 2, for stone, 6 inch.....	5.00
No. 3, for stone, 9 inch.....	6.50
No. 4, for wood, 3 inch.....	3.50
No. 5, for wood, 5 inch.....	4.00
No. 6, to nail on wood.....	3.50
No. 7, to screw in wood.....	3.50

Discount.....per cent.



Price List on Drives Only

No. 0, for brick, 3 inch.....	\$1.50
No. 1, for brick or stone, 4½ inch...	2.00
No. 2, for brick or stone, 6 inch.....	3.00
No. 3, for stone, 9 inch.....	4.50
No. 4, for wood, 3 inch.....	1.50
No. 5, for wood, 5 inch.....	2.00
No. 6, to nail on wood.....	1.50
No. 7, to screw in wood.....	1.50

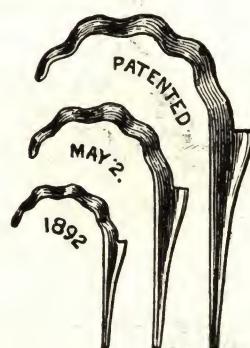
Rack and keys only.....\$2.00

Discount.....per cent.

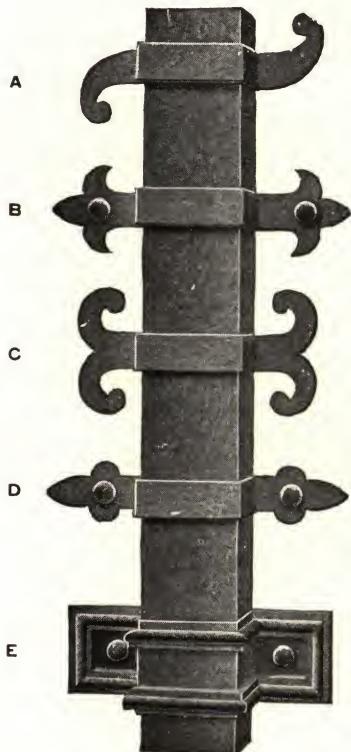
CORRUGATED SICKLE CONDUCTOR HOOKS

List Prices per 100, Tinned

Inches	2	3	4
For wood	\$1.50	2.50	3.50
For brick	1.75	2.75	4.25

Discount.....per cent.

ORNAMENTAL CONDUCTOR STRAPS



Made to fit any size square conductor pipe,
special or regular.

Made from copper, galvanized Toncan metal,
charcoal iron or terne plate.

Prices on application.

Always state size of pipe and grade of strap
wanted.



GOLDEN STAR ROOFING CEMENT

In Paste

For bedding or laying slate, tile or metal.

For repair work cannot be excelled. Will save the price of a new roof.

Can be used for repairing old roofs, chimney joints and in all places where solder cannot be used.

Prices

	Per Pound
Barrels, 800 pounds	\$
Half-barrels, 400 pounds	\$
Tubs, 100 and 300 pounds	\$
Cans, 25 and 50 pounds	\$
Cans, 5 and 10 pounds	\$

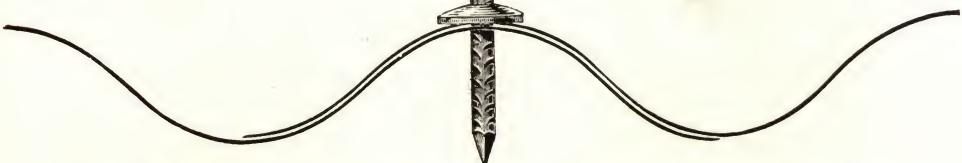


PECORA ROOFING CEMENT

We also carry in stock Pecora Roofing Cement. Put up in 5, 10 and 25 pound cans. Larger packages. Shipped direct from factory.

	Per Pound
5 and 10 pound cans	\$
25 and 50 pound cans	\$
100 and 300 pound tubs	\$

LEAD WASHERS



These Washers when used in applying roofing and siding, as shown in above illustration, make an absolutely water-tight joint on any surface, whether concave, convex or flat; they also prevent rust below the nail head and the head from cutting into the sheet, thus making a more durable job.

Made in Two Sizes

No. 8 has $\frac{5}{32}$ of an inch hole, $\frac{1}{2}$ -inch outside diameter.

No. 12 has $\frac{3}{16}$ of an inch hole, $\frac{1}{2}$ -inch outside diameter.

One pound contains about 325 washers.
One pound required for 2 or 3 squares.

List price, 20 cents per pound.

Put in boxes containing 100 pounds each.

Discounts { In lots of 5 to 10 Boxes.....per cent.
In lots of 1 to 5 Boxes.....per cent.
In lots less than 100 pounds.....per cent.

Section 4

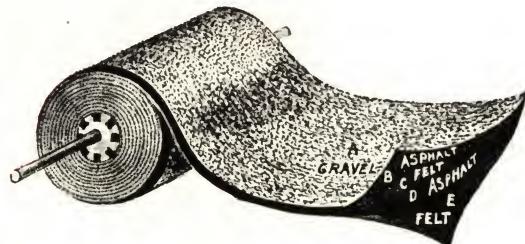
Tinners' and Roofers' Supplies and Trimmings

Gravel Surface Roofing,
Flint Kote Roofing, 5-H
Rubber Roofing, 2 and 3
Ply Tar Roofing, Slaters'
Felt, Tarred Felt, Paints
and Oils. :: :: ::

Solder, Soldering Coppers,
Acid and Flux, Rivets,
Wire, Stove Bolts, Speak-
ing Tube, Can Screws,
Perforated Tin, Trim-
mings of all kinds. :: ::

We shall endeavor to carry in stock a full line of Trimmings and Supplies which we show in this section, so that we can make prompt shipment along with other goods which our customers order.

OSBORN'S ASPHALT GRANITE SURFACE ROOFING



facture. Osborn's Asphalt Granite Surface Roofing is strictly fire-proof and is very durable.

Each roll contains 108 square feet, enough to lay one hundred square feet. We furnish large head nails and asphalt cement with each roll.

Price, per square, complete..... \$.....

AMATITE ROOFING

In accordance with our policy of making Amatite the best ready roofing in the world, we are continually introducing new features.

The latest and most important of these are liquid cement and smooth laps.

With these improvements Amatite is more attractive than ever before.

The liquid cement does not require heating before using. It is simple and easy to apply.



The three-inch smooth margin at the top of each sheet makes tight-fitting and easily-cemented laps.

When you consider these advantages, in addition to the fact that Amatite is waterproofed with coal tar pitch—the greatest waterproofing material known—and covered with a *real mineral surface* that requires no coating or painting, it is not to be wondered at that the sale of Amatite is growing more rapidly than that of any other roofing on the market.

Cement and nails are packed inside each roll.

Price, per square, complete..... \$.....

REX FLINTKOTE ROOFING

Rex Flintkote Roofing is a solid sheet of specially manufactured felt, impregnated with non-volatile and non-soluble compounds called "Saturants," with a heavy outer coating on **both** sides that is tough, durable and flexible, and with a further coating of ground flint on the **under** side.



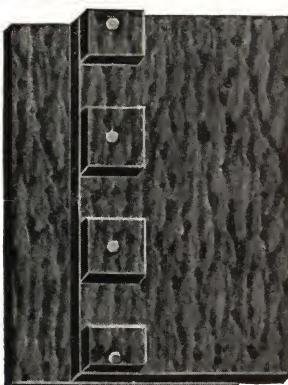
The Weather Side of Rex Flintkote Roofing



Exclusive Features

1. A coating of ground flint on the under side which goes next to the roof boards. This prevents blistering, sticking to boards and rotting from underneath.
2. Patent Caps—tempered squares of roofing material punctured in center for nail. These add 50% to strength of lap and butt seams giving a three-fold thickness of material.
3. Special Formula Cement made of gums used in roofing. Amalgamates with roofing and forms perfect watertight bond.

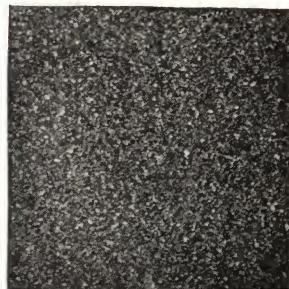
Rex Flintkote Roofing will wear longer, withstand any extreme of climate, sun, snow, ice, rain, dampness, acid fumes, etc., and resists and retards fire. **Rex Flintkote** makes a permanent roofing for factories, storehouses, farm buildings, poultry houses, dwellings and all classes of structures.



A Three-fold Thickness at Laps and Butts Showing Patent Cap



Heavy Elastic Coating on Both Sides



The Coating of Flint Which Goes Next to the Roof Boards

Rex Flintkote Roofing comes in rolls 36 inches wide, each roll containing 216 square feet (can also be had in half rolls of 108 square feet if desired).

Cement, caps, nails furnished with each roll.

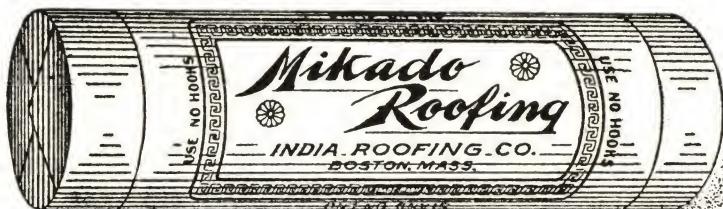
Rex Flintkote is always **one solid sheet**. Word "ply" used to designate thickness. Comes in $\frac{1}{2}$ ply, 1 ply, 2 ply and 3 ply. Weight per square, 1 ply, 35 pounds; 2 ply, 48 pounds; 3 ply, 55 pounds.

Price List

	Half Rolls Per Square	Full Rolls Per Square
$\frac{1}{2}$ ply.....	\$1.80	\$1.75
1 ply.....	2.30	2.25
2 ply.....	3.30	3.25
3 ply.....	4.00	4.00
Discount.....	per cent,	..

Discount.....per cent, ..

MIKADO ROOFING



Mikado is made by the manufacturers of Rex Flintkote and while it is not as high in quality as that roofing it has proven in actual service to be dependable and long wearing. It sells at a very moderate price but is much superior in quality to the cheap roofings on the market and it should not be classed with them.

Mikado Roofing comes 36 inches wide in rolls containing 216 square feet. Nails, caps and cement are packed in each roll.

1 ply 35 pounds per square.....	\$2.25 per square
2 ply 45 pounds per square.....	3.25 per square
3 ply 55 pounds per square.....	4.00 per square

PARADUX CANVAS ROOFING



Structure

Regular Paradux is composed of a layer of special felt saturated with a non-drying chemical and coated top and bottom with waterproofing gums. To the surface of this a layer of canvas is attached.

Paradux has all the advantages of a canvas roofing and is ready to lay without treating the roof as by the old method. Paradux is more durable, requires less painting, resists fire and is the only prepared roofing that can be walked on.

It is used for piazza coverings, balcony floors, roof gardens, steamship decks, garage roofs, etc.

Paradux is 36 inches wide and is put up in rolls containing 216 square feet (also in half rolls containing 108 square feet).

B weighs about 37 pounds to square.....	\$7.00 per square
---	-------------------

CANVAS

We find that there is a growing demand for canvas or army duck, being used on decks, porches, etc. We now carry in stock 12 oz. double filled canvas 30 inches wide and can furnish any quantity. We can also furnish single filled canvas, if desired.

12 oz. Double Filled Canvas.....	Per yard \$.....
12 oz. Single Filled Canvas.....	Per yard \$.....

OSBORN'S 5H RUBBER ROOFING



A dependable, weatherproof, sheet roofing for all classes of buildings.

This roofing is made of very substantial materials. The body is a specially prepared felt impregnated with a high-grade gum-chemical saturant which preserves it permanently. This felt is then coated *on both sides*, under enormous pressure, with heavy gums which seal every pore and make it a single tough, flexible, rubber-like sheet that is absolutely waterproof, that will wear for a long time and that resists fire so that hot sparks falling upon it fail to ignite it.

This roofing is equally proof against the hot summer sun and the cold, frost, ice, snow and slush of winter. It never cracks or becomes brittle, and will outwear any roofing on the market sold at the same price, because it is all substantial honest quality for the money.

Osborn's 5H Roofing comes in 36 inch rolls, each roll contains 2 squares or 216 square feet with an allowance of 16 square feet for laying.

There are three thicknesses known as one, two and three-ply.

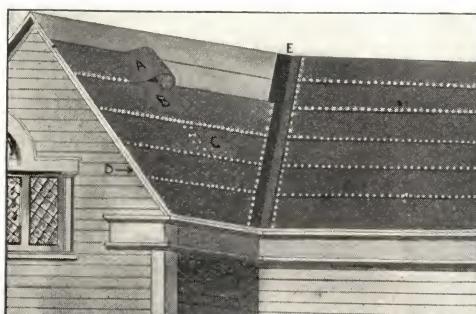
Directions for laying, a can of special cement of a very high quality for bonding laps and butts and special large head nails (superior to the old tin caps in every way) are enclosed in the core of each roll.

1-ply per square complete.....	\$.....
2-ply per square complete.....	\$.....
3-ply per square complete.....	\$.....

GOLDEN STAR PREPARED ROOFING

This roofing is a simple combination of Tarred Felt and Coal Tar Pitch, the best materials known for roofing and water-proofing, either two or three-ply. *We recommend the use of the three-ply.* The labor of laying is the same; the three-ply is always the cheapest in the end. Put up in rolls containing 108 square feet, wrapped and labeled with directions for putting on.

Each roll will cover 100 square feet.



Per roll	Two-Ply	Three-Ply
	\$.....	\$.....

BLACK DIAMOND ROOFING

Made heavy-weight only.—Black Diamond three-ply will weigh about 70 pounds and two-ply about 45 pounds to the roll. There are lighter weight two- and three-ply roofings on the market but Black Diamond is only made in the weights named. These weights and the high quality of material and the care used in its manufacture have made Black Diamond the standard two- and three-ply all over the country.

The weight complete of three-ply Black Diamond, with two gallons Barrett's Roof Coating, $1\frac{1}{2}$ pounds tin caps and 1 pound roofing nails, is about 100 pounds, and of two-ply Black Diamond, complete, about 75 pounds per square. The quantities named are recommended as necessary to lay Black Diamond according to directions.



ENLARGED SECTIONAL DIAGRAMS



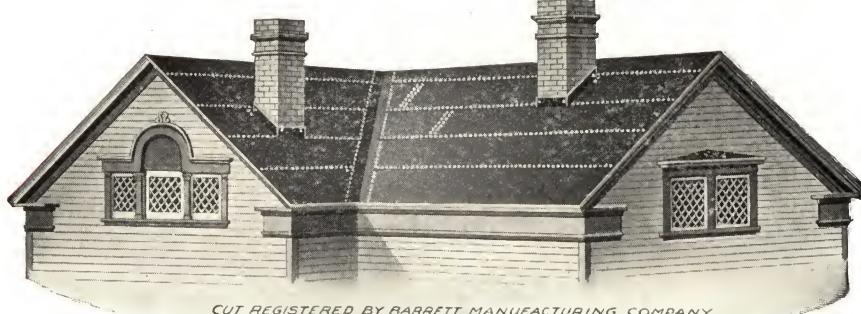
Three-ply consists of three sheets of the best quality of tarred felt (AAA) cemented together with two layers of coal tar pitch (BB).

Every roll of Black Diamond contains 108 square feet, or enough to cover one square (10 feet by 10 feet) and allow for necessary two-inch lap. Black Diamond Roofing is made 32 inches wide, and rolls are from 40 feet 6 inches to 41 feet in length.

Three-ply, \$.....

Two-ply consists of two sheets of the best quality of tarred felt (AA) cemented together with one layer of coal tar pitch (B).

Two-ply, \$.....



CUT REGISTERED BY BARRETT MANUFACTURING COMPANY

RED SEAL ROOFING

Our Red Seal Roofing is equal in quality to most manufacturers' best grades of two- and three-ply, but it is lighter in weight than the Black Diamond. Red Seal two-ply weighs about 40 pounds, and Red Seal three-ply about 60 pounds per roll of 108 square feet, and it is our experience that these are the lightest weights at which ready roofing service should be assured. Except for this difference in weight, Red Seal is made and laid the same as Black Diamond. The Seal Brand as per illustration, except that it is always printed in red, shows on every label.



Two-ply, \$.....

Three-ply, \$.....

RUTHERFORD RED ROPE ROOFING AND SHEATHING PAPER

Rutherford Red Rope Roofing is the highest grade uncoated sheathing paper in existence.

The paper is made from the best grade of manila rope stock, which gives a long-fibred, tough sheet. This sheet is then rendered air-tight and waterproof by a special chemical treatment, the paper being thoroughly saturated and compressed.

Rutherford Red Rope Roofing is not only an ideal insulating paper, but serves as an excellent roofing for temporary and small structures. As a roofing and siding for Poultry Houses, Store Houses, etc., it offers first-class protection at a low cost.

Rutherford Red Rope Roofing is made 36 inches wide, and packed in 100, 250 and 500 square-foot rolls. Each roll contains nails and caps for applying. It weighs about 120 pounds to 1,000 square feet.

500 square foot rolls, per roll.....	\$.....
250 square foot rolls, per roll.....	.....
100 square foot rolls, per roll.....	.....



TRADE MARK
REGISTERED.

IBEX BUILDING AND INSULATING PAPERS



Ibex Extra and **Ibex** are both made in three weights or thicknesses, 1 ply, 2 ply and 3 ply. Rolls are 36 inches wide and contain 1,000 square feet. Half rolls contain 500 square feet. The selection of thickness is in accordance with the work to be performed, as noted below. Average weight per roll as follows:

RECOMMENDATIONS FOR IBEX PAPERS

Ibex Extra is for insulating purposes where greatest efficiency is required.

For general buildings, factories, mills, etc., use **Ibex Extra, 1 ply**.

For cold storage plants, refrigerators, ice houses, ice manufacturing plants, etc., use **Ibex Extra, 2 ply**.

For packing houses, breweries, refrigerator cars, steamship refrigeration, exposed floor spaces, and all places where extreme conditions are met with **Ibex Extra, 3 ply**, is most desirable.

Ibex makes the best sheathing paper for temporary or permanent structures.

For temporary work, lining purposes and general sheathing of frame structures use **Ibex, 1 ply**.

For best sheathing purposes on residences, churches, and large buildings; for laying under metal roofs to prevent corrosion, **Ibex, 2 ply**, should be used.

For ice house construction, general cold storage use and for sheathing buildings that have unusual exposure **Ibex, 3 ply**, will meet every requirement.

IBEX EXTRA

1 ply, 40 lbs., per roll.....	\$.....
2 ply, 54 lbs., per roll.....	.....
3 ply, 99 lbs., per roll.....	.....

IBEX

1 ply, 31 lbs., per roll.....	\$.....
2 ply, 41 lbs., per roll.....	.....
3 ply, 66 lbs., per roll.....	.....

TARRED FELTS



BARRETT'S NO. 2 TARRED FELT

It is the medium weight; about 16 pounds to 100 square feet; is 32 inches wide, and rolls will weigh from 50 to 60 pounds. For sheathing and roofing purposes it is unexcelled, and will always be a popular weight of tarred felt with the trade. It is sold by the hundredweight and put up in wrappers bearing Barrett's Trade Mark.

BARRETT'S NO. 3 TARRED FELT

Weighs about 12 pounds to 100 square feet; is 32 inches wide and rolls will weigh from 50 to 60 pounds.

No. 2 Tarred Felt, per 100 lbs...\$..... No. 3 Tarred Felt, per 100 lbs...\$.....



WATERPROOF SHEATHING

"WB" Waterproof, 36 in. wide, 600 sq. ft. in a roll, per roll.....\$.....
 "WC" Waterproof, 36 in. wide, 600 sq. ft. in a roll, per roll.....\$.....



ROSIN SIZED SHEATHING

No. A	Red Rosin Sized, 36 in. wide, 500 sq. ft. in a roll, weight per roll 35 lbs, per roll.....	\$.....
No. B	Red Rosin Sized, 36 in. wide, 500 sq. ft. in a roll, weight per roll 25 lbs., per roll.....	\$.....
No. C	Red Rosin Sized, 36 in. wide, 500 sq. ft. in a roll, weight per roll 18 lbs., per roll.....	\$.....

DEADENING FELT

No. 7 Comfort, Wool Deadening Felt, width 36 in., weight $1\frac{1}{2}$ lbs. per sq.
yd., 60 to 80 lbs., in a roll, price per lb.....\$.....

SLATERS' FELT

Barrett's Slaters' Felt—Carefully made from the same quality of material as the Dry Saturated, but lighter in weight. It is used extensively for lining under slate, tile, shingles, etc., and also as a sheathing felt. Barrett's Slaters' Felt is made either 32 or 36 inches wide, and is put up in full rolls only, weighing about 35 pounds, and containing 500 square feet.

Price per roll..... \$.....

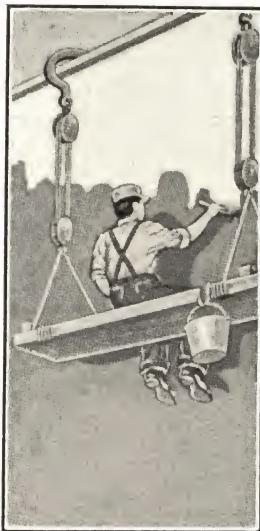


Tin Caps—The nail is driven through center of cap, giving nail a large head and preventing its cutting into the felt or paper. 1½ lbs. to lay 100 square feet.

Per lb..... \$.....



MAGNITE COLD WATER PAINT



**Applied by
Machine
or Brush**

**Magnite Paint
Absolutely
Fireproof**

**Lowers
Insurance
Premiums**



Magnite is a strongly bound paint pigment, manufactured (under U. S. Patents) in a dry powder form, and ready for use when mixed with ordinary cold water. Five pounds of Magnite will make one gallon of good outside paint, that will cover, on most surfaces, about 300 square feet.

Magnite is milled in White and twelve attractive practical colors. It is packed in barrels, kegs and cases, and is guaranteed not to fade, blister or peel off, when applied and mixed according to directions, and will, under the same conditions, last as long as oil paint.

Magnite Cold Water Paint is sanitary, absolutely fireproof and weatherproof and can be used for all kinds of outside painting.

Owing to its fireproofing qualities, Magnite is specified by the Board of Fire Underwriters, thereby greatly reducing your fire insurance rates.

Our MAGNITE COLD WATER PAINT has all the good properties of an oil paint at about one-quarter the cost, thereby saving you 75 per cent.

Magnite is packed in 5 lb. packages, 100 lb. kegs, 200 and 400 lb. barrels. Write us for samples and prices.

ROOFING PAINT, ETC.



"OSBORN'S" BLACK ELASTIC ROOF AND IRON PAINT

Has no equal for use on Roofs of Barns, Warehouses, Dwellings, Factories, Cars, Boats, Depots, Public Buildings, or Roofs of any description or of any material.

Quantity	Barrels	Half Bbls.	10 Gal.	5 Gal.	3 Gal.	1 Gal.
Per gallon	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....
Package extra		\$.....	\$.....	\$.....	\$.....	\$.....

"OSBORN'S" SMOKE STACK ENAMEL

An Elastic and Durable Jet Black Enamel

It is not affected by heat or cold and will last from two to five years. It is not affected by acids, alkalies, sulphur or chemical fumes or gases, dampness, salt air or other causes that are so disastrous to other paints. It requires no special treatment and is applied the same as any other paint. When properly used it is a perfect protection against rust or corrosion.

Quantity	Barrels	Half Bbls.	10 Gal.	5 Gal.	3 Gal.	1 Gal.
Per gallon	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....
Package extra		\$.....	\$.....	\$.....	\$.....	\$.....

FLINTKOTE ROOF PAINT



Rex Flintkote Roof Paint is a material adapted for use on Rex Flintkote Roofing. A Rex Flintkote Roof should never be painted with anything but Rex Flintkote Roof Paint. The reason for this is that it is made of the same compounds that enter into the manufacture of roofing itself, and by painting it with Rex Flintkote Roof Paint, practically a new coat of roofing material is added to the roofing.

One gallon will cover two squares.

	Bbl. Lots	Half Bbls. Lots	5 to 10 Gal. Lots
Per gallon	\$.....	\$.....	\$.....



Linseed oil was formerly considered the only oil suitable for painting, yet we have convinced the paint trade and the public in general that our Sipe's Japan Oil is superior to linseed oil for painting purposes.

SOME ADVANTAGES SECURED BY USING SIPE'S JAPAN OIL

It works easy and requires less labor in its application and less wear of brushes. More work per day can be done with it than with linseed oil.

Dries rapidly and enables the painter to get his work done without delay. One hour after application, the hardest rain will not wash it off.

It prevents chalking, scaling and cracking of paints. Its penetrating qualities make it one of the best things known for old paint as it sinks into and adds new life to it and also serves to unite additional coats of paint, when applied one upon another.

Adheres better, is more elastic and wears longer than linseed oil. Firmly attaches itself to galvanized iron, and will not peal or scale off.

It will stop and prevent rust if the surface is dry when coated, and the rust not too heavy to be penetrated. It is superior to linseed oil both as to durability and finish.

	Barrel	$\frac{1}{2}$ Bbl.	10 Gal.	5 Gal.	3 Gal.	1 Gal.
Per gallon	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....
Package, extra	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....

OSBORN'S VENETIAN PAINT



Osborn's English Venetian Red Paint is made from the best natural English Venetian pigment, finely ground in raw linseed oil, making a paste which is thinned down with enamel oil dryer. This grade of paint is manufactured under our special analysis and is guaranteed to spread easily and when dry gives a high gloss and tough surface. Recommended especially for tin roofing, gutters, conductors, etc.

Quantity, gallons	10	5	3	1
Per gallon	\$.....	\$.....	\$.....	\$.....

We also furnish this product in paste form.

Quantity, pounds	5	10	25	50	100
Per pound	\$.....	\$.....	\$.....	\$.....	\$.....

PITCH AND PAVING CEMENT



Pitch is the solid residuum resulting from direct distillation of coal tar. Barrett's pitch is made in *first quality only*, but of several consistencies, as best adapted for different purposes. It is strictly "straight run," *i. e.*, none of the valuable properties of the tar are removed in process of distillation.

BARRETT'S ROOF COATING

Known everywhere from its satisfactory service as coating for Black Diamond and Red Seal Roofings. Ready for immediate use. It protects new roofs and prolongs the life of old roofs. A poor coating can spoil a good roof. Barrett's Roof Coating will preserve—not disintegrate.

Put up in any size package, ready for the brush. Two gallons will coat 100 square feet *twice*. Weight, including package, about 12 pounds per gallon. Sold by the gallon.

Roof Coating, in 1-gallon cans, per gallon.....	\$.....
Roof Coating, in 5-gallon kits, per gallon.....	.....
Roof Coating, in 10-gallon kits, per gallon.....	.....
Roof Coating, in 50-gallon barrels, per gallon.....	.....



DRY ROOFING PAINT



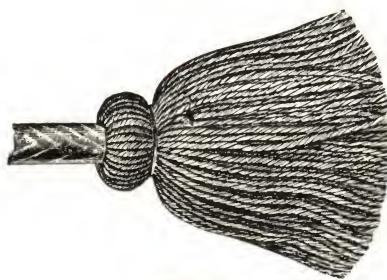
Venetian Red, per pound.....	\$.....
Metallic Brown, per pound.....	.....
Iron Clad, per pound.....	.....

Dry roofing paint comes in barrels of from 300 to 400 pounds each, but can be had in half-barrels.

STOP-A-LEKE STYCK



Stop-a-Leke Styck, for mending leaks in all kinds of roofing, length 12 inches, diameter 1 5/8 inches, per stick.....	\$.....
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**MOPS**

We recommend the use of this mop in the construction of tarred roofs. 18 ounces with handles complete, \$..... per dozen.

DIRECTIONS FOR LAYING OUR PREPARED ROOFING

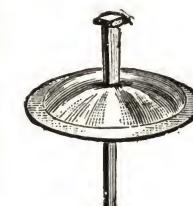
The roof boards should be dry, of uniform thickness, and laid close together. Cover all knot holes with pieces of tin, and sweep clean of nails, chips, etc.

In nailing roofing commence at the eaves or gutter (if there be any) and lay the first piece parallel with the edge and close to it. Nail the lower edge with 1½-inch barbed wire roofing nails every two inches, using the tin caps (see cut No. 2). Always begin in the center of roof and nail toward the edge. Let the second sheet lap over the first two inches; be sure to thoroughly coat between the laps with our Asphaltum Cement. Then nail as before, repeating thus until the roof is covered. Nail well along the edges, and be careful to make proper fastenings around chimneys, etc., as per Fig. 4.

**Fig. 3**

Where there are coping, walls, chimneys, etc., let the roofing run to the angle (as in Figs. 3 and 4) and finish with a separate strip of roofing, six or eight inches wide, lapping one-half on the roof and the other on the wall.

Secure the top edge to wall by nailing wood strip over the same and cementing it well to prevent water from getting back of it.

**Fig. 2****Fig. 4**

SIMPLEX ROOFING NAILS

ONE-PIECE**NOT TWO-PIECE**

Head made from heavy stock. Stem riveted both sides of head.
Time savers.

Head is curved. Edge will not curl up when driven.
Four times the head area of a large-headed nail.

Stem smaller than stem of large-headed nail, thus do not split roof boards.
Can be applied in one-quarter the time that a tin cap and nail require.
Made with two lengths of stem—1-inch and 1½-inches.

Price per keg, 100 lbs \$.....

BAR SOLDER

Golden Star Solder (special proportion of pure tin and lead), per lb.....	\$.....
Silver Star Solder, 50-50, per lb.....	
Warranted ($\frac{1}{2} \times \frac{1}{2}$ solder), per lb.....	
Commercial ($\frac{1}{2} \times \frac{1}{2}$ solder), per lb.....	
Triangular Bar Solder, per lb.....	
Drop Solder	

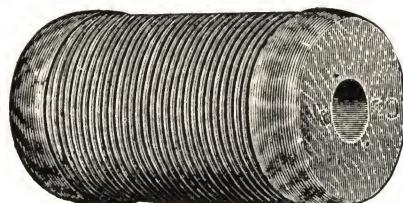
Packed in 25, 50, 100 and 500 pound cases

BLOCK TIN**BLOCK TIN**

"Banka," in pigs of about 25 or 100 pounds, per lb.....	\$.....
"Straits" and Malacca pigs of about 25 or 100 pounds, per lb.....	
Bar, in bars of about 1 pound, per lb.....	

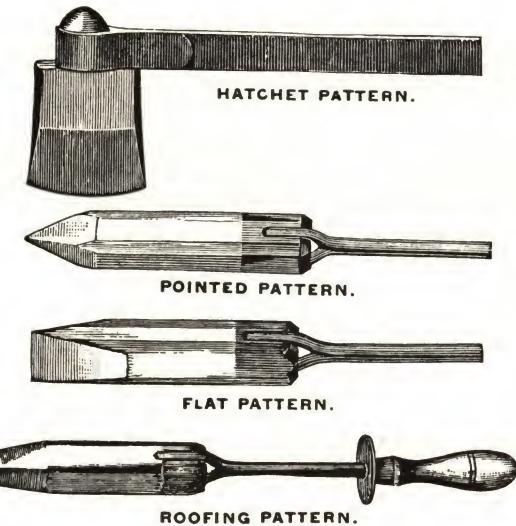
PIG LEAD

Refined, in pigs of about 100 pounds, per lb.....	\$.....
Bar, in boxes of 25 pounds, per lb.....	

WIRE SOLDER

Half-and-Half, per lb.....	\$.....
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SOLDERING COPERS



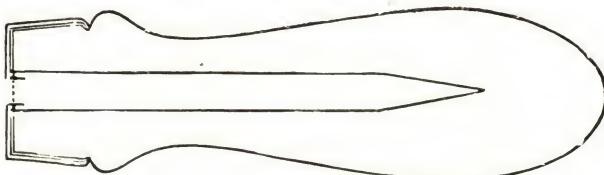
POINTED ROOFING AND BOTTOM COPERS

3	lb. per pair and heavier.....	Base per lb
2½	" "	" plus 1c
2	" "	" " 2c
1½	" "	" " 3c
1	" "	" " 6c

EXTRAS FOR OTHER STYLES

Hatchet coppers, rigid handles.....	3	c lb. ad'l
Hatchet coppers, swivel handles.....	5½c	"
Floating coppers	3½c	"
Hatchet seaming coppers.....	3½c	"
Tillery capping	3½c	"

SOLDERING IRON HANDLES



We have them in two sizes, Nos. 2 and 4; No. 2 for one, two and three pound coppers, and No. 4 for four, five and six pound coppers.

Nos.	2	4
Per doz.	\$.....	\$.....

SALAMAC

Salamac is in blocks 8 inches long by 1½ inches square, each weighing about 18 ounces.



Price per bar \$.....

MURIATIC ACID

Commercial muriatic acid, in one
gallon jugs, per gallon..... \$.....

In carboys, per pound..... \$.....

Carboy, extra \$ 2.00

Carboys may be returned for credit.



ROSIN

We carry this material
in barrels, but are pre-
pared to fill orders in any
quantity.

Rosin in bulk
Cents per lb.....

CHARCOAL

We buy this material
by the car load from the
Northwest territory. It
is all burned from hard
wood, and is especially
adapted to tinners' use.
Put up in paper sacks
containing $\frac{1}{2}$ bushel.
Price per sack.. \$.....

Also furnished in bur-
lap bags containing about
 $2\frac{1}{2}$ bushels.

Price per bushel.\$.....
Bags extra cents each

When bags are re-
turned to us free of
charge, in good condi-
tion, they are credited at
full value.



RUBY SOLDERING FLUX



A modern chemical discovery. A quick-acting, harmless flux for all metals. A substitute for acid, salts and pastes.

The only flux for soldering galvanized steel, which does not tarnish or damage the coating.

Users are free from the effects of the fumes of acid, which destroys stock, tools, machinery and men.

It is unequaled for soldering tin, copper and brass. The only flux for ALL metals which does not cause the deterioration of the lead in solder, and work done with it is at once stronger, 500 per cent better in appearance, and free from oxidation, "rust," "tarnish," or "corrosion."

It is used by the U. S. Navy, several Ship Building Companies, and by many canners in the United States, Canada, and other countries.



The above cut illustrates our practical and strong metal receptacle made of tin and brass tubing in convenient form for carrying the fluid out on job work, or on the shop bench, holding sufficient flux for three pounds of solder. The flow of fluid is easily adjusted, while new brush hair may be easily supplied. Ruby Fluid is the only flux for all metals which can be handled in metal containers.

List Prices

Pint cans, per pint.....	\$1.00
Quart cans, per quart.....	1.50
½ Gallon cans	2.40
Gallon cans, per gallon	3.60
5 Gallon cans, per gallon	3.20
Ruby Fluid Fountain Brushes, each.....	.50

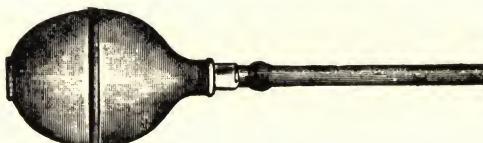
Discount.....per cent.

PLUMBERS' MALLEABLE IRON LADLE**Double Lipped**

Diam. of Bowl	Depth	Length	Holds Metal	List Price Per Dozen
3 inch	1 1/8 inch	15 inch	1 1/2 lbs.....	\$2.50
4 inch	1 3/4 inch	16 inch	3 1/2 lbs.....	3.25
5 inch	2 inch	19 inch	7 lbs.....	5.60
6 inch	2 3/8 inch	21 inch	12 lbs.....	7.25

Discount.....per cent.**PLUMBERS' MELTING POT****Cast Bowl, Wrought Iron Bail**

Diam. of Bowl	Depth	Holds Metal	Weight	List Price
5 inch	3 3/4 inch	10 lbs.	3 3/4 lbs.....	\$0.60 each
6 inch	4 inch	15 lbs.	7 1/4 lbs.....	.95 each

*Discount.....per cent.***THE PATENT RUBBER BULB**

Price each \$.....

SOLDERING SALTS

Warranted to excel all other preparations for soldering Tin, Copper, Brass, Iron and all Metals.



It is a dry salt in small bulk. By adding a little water it is instantly ready for use.

It is free from disagreeable fumes.

It leaves the metal bright and clean. It causes the solder to flow more evenly.

It does not injure the irons like acid, and is unexcelled for tinning them.

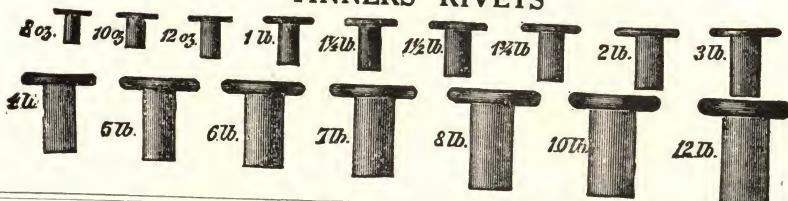
An iron tinned with it will wear longer than when anything else is used.

It is superior to any other preparation for tinning metal. It can be used on damp surfaces.

1/2 lb. Bottles each.....	\$0.60
1 lb. Bottles each.....	1.00

Discount.....per cent.

TINNERS' RIVETS

In Packages of 1000
Price per 1000

Size	Black	Metallic Tinned	Tin Plated	In Bulk Price per Pound	
				Size	Black
8 oz.	\$0.20	\$0.28	\$0.24	8 oz.	\$0.42
10 oz.	.22	.31	.27	10 oz.	.38
12 oz.	.24	.35	.30	12 oz.	.35
14 oz.	.26	.39	.33	14 oz.	.33
1 lb.	.27	.42	.35	1 lb.	.30
1 1/4 lb.	.29	.48	.39	1 1/4 lb.	.27
1 1/2 lb.	.33	.55	.45	1 1/2 lb.	.26
1 3/4 lb.	.37	.64	.51	1 3/4 lb.	.25
2 lb.	.42	.72	.58	2 lb.	.24
2 1/2 lb.	.55	.83	.75	2 1/2 lb.	.24
3 lb.	.60	1.05	.84	3 lb.	.23
3 1/2 lb.	.70	1.22	.98	3 1/2 lb.	.23
4 lb.	.76	1.36	1.08	4 lb.	.22
5 lb.	.90	1.65	1.30	5 lb.	.22
6 lb.	1.08	1.98	1.56	6 lb.	.21
7 lb.	1.26	2.31	1.82	7 lb.	.21
8 lb.	1.44	2.64	2.08	8 lb.	.21
9 lb.	1.53	2.88	2.25	9 lb.	.21
10 lb.	1.75	3.25	2.55	10 lb.	.20
12 lb.	1.96	3.76	2.92	12 lb.	.19 1/2
14 lb.	2.31	4.41	3.43	14 lb.	.19 1/2
16 lb.	2.64	5.04	3.92	16 lb.	.19 1/2

COOPERS' RIVETS

1d, per lb.....	\$0.21	4d, per lb.....	\$0.20
2d, per lb.....	.20 1/2	5d, per lb.....	.20
3d, per lb.....	.20	6d, per lb.....	.20

EXTRAS FOR TINNERS' AND COOPERS' RIVETS IN BULK

List Extras—For tinners' and coopers' rivets—For oval head and shoulder or extra length rivets, add 2 cents per lb. to list price for each specialty.

Net Extras—For tin or copper-plated, add 1 cent per lb. to net price. For metallic tinning add 2 1/2 cents per lb. to net price.

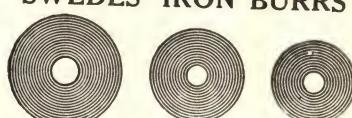
List Rebates—Prices stated are for 10 lb. and 5 lb. boxes. For 25 and 50 lb. boxes deduct 2 cents, and for 100 and 200 lb. kegs, deduct 4 cents per lb. from list price.

EXTRAS FOR TINNERS' RIVETS IN PACKAGES

List Extras—For oval or countersunk heads, shoulder and pointed, or extra length rivets, add 10 cents per 1,000 to list price for each specialty.

Discount.....per cent.

SWEDES' IRON BURRS



List of January 8, 1904.

Nos.	3/8	1 1/2	5/8	1	2	3	1/4	4	5	6
Black, per lb.....	\$0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.37	0.38	0.42
Nos.	7	8	9	10	11	12	13	14	15	16
Black, per lb.....	\$0.42	0.43	0.44	0.45	0.47	0.50	0.60	0.70	0.80	....

Tinned.....*cts. per lb. extra*
Discount.....per cent.

BULK RIVETS**Any Style of Head****Cents per Pound**

Length Dia.	1 In. & Longer 1/2	7/8	3/4	5/8	1 1/2	1 7/8	1 3/4	3/8	1 1/2	1 5/8	3/2	1/4	3/2	1 3/8	5/8	1 1/8	3/2
19/16	19 1/2	19 1/2	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19/8	19 1/2	19 1/2	20	21	...	...	...	...	...	...	...	...	...	...	...	...	...
19/4	19 1/2	20	20	20 1/2	21	21	...	...	...	...	...	...	...	...	...	...	...
19/8	19 1/2	20	20	20 1/2	21	22	22	22	23	23	23	23	23	23	23	23	23
1	20	20 1/2	20 1/2	21	22	23	23	23	23	23	23	23	23	23	23	23	23
2	20	20 1/2	20 1/2	21	22	23	23	23	23	23	23	24	24	24	24	24	24
3	20	20 1/2	20 1/2	21	22	23	23	23	23	23	23	24	24	24	24	24	24
4	20	20 1/2	20 1/2	21	22	23	23	23	23	23	23	24	24	24	24	24	24
5	21	21 1/2	21 1/2	22	23	24	24	24	24	24	25	26	26	26	27	27	28
6	21	21 1/2	21 1/2	22	23	24	24	24	25	25	26	26	27	28	29	29	30
7	21	21 1/2	21 1/2	22	23	24	24	24	25	25	26	26	27	28	29	30	31
8	22	22 1/2	22 1/2	23	24	25	25	26	26	27	27	28	29	30	31	32	33
9	23	23 1/2	23 1/2	24	25	26	26	27	27	29	29	29	30	31	33	35	36
10	24	24 1/2	24 1/2	25	26	27	28	29	31	33	34	34	36	39	41	43	44
11	25	25 1/2	25 1/2	26	28	30	32	33	34	36	37	37	39	43	46	48	51
12	26	26 1/2	26 1/2	27	30	32	34	35	36	38	40	41	42	47	51	56	61
13	30	30 1/2	30 1/2	31	33	36	39	40	41	43	45	46	47	51	56	61	66
14	32	32 1/2	32 1/2	33	36	41	44	46	51	56	58	61	64	66	69	71	

Packed as follows: 5 lb. boxes, 100 lbs. in case. In bulk, 50 lbs., 25 lbs. and 10 lbs. in a box, and 100 and 200 lbs. in a keg. Prices stated are for 10 lb. and 5 lb. boxes.

Rivets made from smaller wire than No. 14 all lengths list 80 cents per lb.; $\frac{3}{2}$ diameter, list price No. 13; $\frac{7}{8}$ diameter, list price No. 5; $\frac{5}{8}$ diameter, list price No. 8; $\frac{1}{8}$ diameter, list price No. 11, $\frac{3}{2}$ diameter, list price No. 2.

List Extras.—For shoulder and pointed rivets, add 2 cents per lb. to list price for each specialty, excepting pointed, hame, caster, and sucker rod. Intermediate lengths and diameters take list price of nearest smaller size.

Net Extras.—For tin or copper-plated, add 1 cent per lb. to net price. For metallic tinning, add $2\frac{1}{2}$ cents per lb. to net price.

List Rebates.—For 25 and 50 lb. boxes, deduct 2 cents, and for 100 and 200 lb. kegs, deduct 4 cents per lb. from list price.

APPROXIMATE NUMBER OF RIVETS IN 1 POUND

Length Inch	Wire	Wire	Wire	Wire	Wire	Wire	Wire	Wire
	3/8	1/4	No. 6	1/4	No. 7	No. 8		
1/2	28	48	83	130	150	160	210	
3/4	24	39	62	104	125	136	160	
7/8	22	31	55	91	108	116	142	
1	20	28	50	83	94	102	125	
1 1/4	18	26	43	68	80	88	110	
1 1/2	16	22	38	62	71	75	96	
1 3/4	14	20	33	54	64	67	83	
2	13	18	29	48	56	60	72	
2 1/4	12	16	25	41	48	52	66	
2 1/2	11	15	23	37	44	47	57	
2 3/4	10	14	21	34	40	43	52	
3	9	13	20	31	37	39	48	
3 1/4	9	12	19	29	35	37	46	
3 1/2	8	12	18	27	33	35	44	
3 3/4	7	11	17	26	32	34	43	
4	7	10	16	25	31	33	41	

COPPER AND BRASS RIVETS**Flat Head Copper and Brass Tinners' Rivets**

In Packages of 100.

 $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3 and 4 lb. to M.**OVAL HEAD BRASS JACKET RIVETS**

Length Measured Under Head.

Length, in.	$\frac{1}{4}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{16}$
Thickness, gauge	7	8	8	9	12	13	

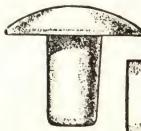
COPPER HOSE AND BELT RIVETS AND BURRS

Revised July 1, 1898

Nos.	3 to 7 Incl.	8	9	10	11	12	13	14	15	
Cents Per Pound										
In bulk		49	50	52	54	56	58	60	65	70
Uniform lengths, packed in 1 or 4 lb. boxes	49	50	52	54	56	58	60	65	70	
Uniform lengths, packed in $\frac{1}{2}$ or $\frac{3}{4}$ lb. boxes	52	53	55	57	59	61	63	68	73	
Assorted lengths, $\frac{3}{8}$ to $\frac{3}{4}$ in., packed in 1 lb. boxes	55	56	58	60	62	64	66	71	76	
Assorted lengths, $\frac{3}{8}$ to $\frac{3}{4}$ in., packed in $\frac{1}{2}$ or $\frac{3}{4}$ lb. boxes	52	53	55	57	59	61	63	68	73	
Assorted lengths, $\frac{3}{8}$ to $\frac{3}{4}$ in., packed in $\frac{1}{4}$ lb. boxes	55	56	58	60	62	64	66	71	76	
Assorted lengths, $\frac{3}{8}$ to $\frac{3}{4}$ in., packed in $\frac{1}{4}$ lb. boxes	57	58	60	62	64	66	68	73	78	

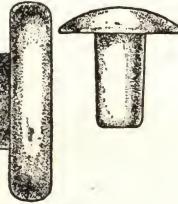
Copper Braziers'
Rivets.

No. 1



Flat Head Braziers

No. 2

**OVAL HEAD** (Length Measured Under Head)

Nos.	00	0	1	2	3	4	5	6	7	8	9	10
No., to lb.	160	148	66	49	37	28	23	19	13	8	6	5
Diameter of shank.....	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{17}{32}$	$\frac{9}{32}$	$\frac{15}{32}$	$\frac{23}{32}$	$\frac{31}{32}$	$\frac{7}{16}$	$\frac{17}{32}$	$\frac{5}{8}$	$\frac{21}{32}$
Length, under head.....	$\frac{1}{16}$	$\frac{3}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{15}{16}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$

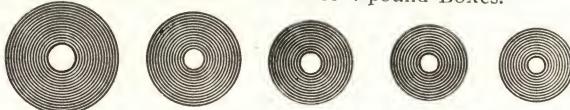
FLAT HEAD COPPER RIVETS (Length Measured Under Head)

$\frac{1}{4}$ in. Diameter of Shank, length in.....		$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
No. to lb.....		48	36	32	30
5-16 in. Diameter of Shank, length in.....		$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
No. to lb.....		26	24	21	17
$\frac{3}{8}$ in. Diameter of Shank, length in.....	1	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	2
No. to lb.....	17	15	13	12	10
$\frac{1}{2}$ in. Diameter of Shank, length in.....	1	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	2
No. to lb.....	9	8	7	6	5

Prices Quoted on Application.

COPPER BURRS

In Bulk or Packed in 1 or 4-pound Boxes.



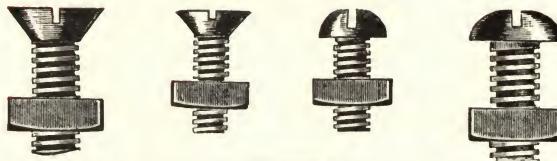
Nos.	3 to 7	8	9	10	11	12	13	14	15
Price per pound.....	\$0.49	\$0.50	\$0.52	\$0.54	\$0.56	\$0.58	\$0.60	\$0.65	\$0.70

Burrs Packed in $\frac{1}{2}$ -pound Boxes, Add \$0.03 per Pound.

STOVE BOLTS
FLAT OR ROUND HEADS

List of June 1, 1908

Price per 100



Length	$\frac{5}{32}$ & $\frac{3}{16}$	$\frac{7}{32}$ & $\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
$\frac{3}{8}$	\$0.85	\$....	\$....	\$....	\$....	\$....
$\frac{1}{2}$	.85	1.20	....	....	....	....
$\frac{5}{8}$	.85	1.20	....	....	....	....
$\frac{3}{4}$	.85	1.20	1.75	2.65	....	....
$\frac{7}{8}$	.90	1.25	1.80	2.70	....	....
1	.90	1.30	1.85	2.75	7.30	9.50
$1\frac{1}{8}$	.95	1.35	1.90	2.85	7.30	9.50
$1\frac{1}{4}$	1.00	1.40	1.95	2.90	7.30	9.50
$1\frac{5}{8}$	1.05	1.45	2.00	3.00	7.30	9.50
$1\frac{1}{2}$	1.10	1.50	2.05	3.10	7.30	9.50
$1\frac{3}{4}$	1.15	1.55	2.15	3.20	7.50	9.80
2	1.20	1.60	2.30	3.40	7.70	10.10
$2\frac{1}{4}$	1.25	1.70	2.40	3.60	7.90	10.35
$2\frac{1}{2}$	1.30	1.80	2.50	3.80	8.15	10.65
$2\frac{3}{4}$	1.40	1.90	2.60	4.00	8.35	10.90
3	1.50	2.00	2.70	4.20	8.55	11.20
$3\frac{1}{4}$	1.60	2.10	2.85	4.40	8.75	11.50
$3\frac{1}{2}$	1.70	2.20	3.00	4.60	8.95	11.75
$3\frac{3}{4}$	1.80	2.30	3.15	4.80	9.15	12.00
4	1.90	2.40	3.30	5.00	9.40	12.30
$4\frac{1}{4}$	2.00	2.50	3.45	5.20	9.60	12.60
$4\frac{1}{2}$	2.10	2.60	3.60	5.40	9.80	12.90
$4\frac{3}{4}$	2.20	2.70	3.75	5.60	10.00	13.15
5	2.30	2.85	3.90	5.80	10.25	13.45
$5\frac{1}{4}$	2.40	3.00	4.10	6.00	10.45	13.75
$5\frac{1}{2}$	2.50	3.15	4.30	6.20	10.65	14.00
$5\frac{3}{4}$	2.60	3.30	4.50	6.40	10.85	14.30
6	2.75	3.45	4.70	6.60	11.05	14.55
$6\frac{1}{4}$	2.90	3.60	4.90	6.80	11.25	14.85
$6\frac{1}{2}$	3.05	3.75	5.10	7.00	11.50	15.10
7	....	....	....	....	11.85	15.70

For nickel-plating add 1.00 to list.

NET PRICES FOR EXTRA NUTS

Manufacturers' Standard List

November 15, 1899.

Size of bolts	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$ & $\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
For one extra square nut, per 100 bolts	\$0.25	\$0.35	\$0.45	\$0.55	\$0.65	\$0.85	\$1.35	\$2.00	\$3.00
For one extra hexagon nut, per 100 bolts .....	.35	.45	.55	.70	.85	1.15	1.75	2.50	3.60
Size of nut	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$			
For one thumb or wing nut in place of square or hexagon nuts, per 100 bolts.....	\$0.30	\$0.40	\$0.50	\$0.60	\$0.75	\$0.90			

APPROXIMATE NUMBER OF FLAT AND ROUND HEAD STOVE BOLTS IN ONE KEG

Nuts Separate

Length	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
$\frac{3}{8}$	35,000	32,000	.....	.....	.....	.....
$\frac{1}{2}$	32,000	30,000	22,000	18,000	.....	.....
$\frac{5}{8}$	30,000	28,000	20,000	17,000	.....	.....
$\frac{3}{4}$	28,000	26,000	19,000	16,000	9,000	5,500
$\frac{7}{8}$	26,000	24,000	18,000	15,000	8,500	5,000
1	24,000	22,000	17,000	14,000	8,000	4,700
$1\frac{1}{8}$	22,000	20,000	16,000	13,000	7,500	4,300
$1\frac{1}{4}$	20,000	18,000	15,000	11,000	7,000	4,000
$1\frac{3}{8}$	18,000	16,000	14,000	10,000	6,500	3,700
$1\frac{1}{2}$	16,000	15,000	13,000	8,000	6,000	3,500
$1\frac{3}{4}$	15,000	14,000	12,000	7,500	5,500	3,300
2	14,000	13,000	11,000	7,000	5,000	3,100
$2\frac{1}{4}$	.....	12,000	10,000	6,500	4,700	2,900
$2\frac{1}{2}$	.....	11,500	9,500	6,000	4,300	2,700
$2\frac{3}{4}$	.....	11,000	9,000	5,500	4,000	2,500
3	.....	10,500	8,500	5,000	3,700	2,300
$3\frac{1}{4}$	.....	10,000	8,000	4,700	3,300	2,100
$3\frac{1}{2}$	.....	9,500	7,500	4,400	3,000	1,900
$3\frac{3}{4}$	.....	.....	7,000	4,000	2,700	1,700
4	.....	.....	6,500	3,700	2,300	1,500
$4\frac{1}{4}$	.....	.....	.....	3,300	2,000	1,300
$4\frac{1}{2}$	.....	.....	.....	3,000	1,700	1,100
$4\frac{3}{4}$	.....	.....	.....	2,700	1,600	1,000
5	.....	.....	.....	2,400	1,500	900
$5\frac{1}{4}$	.....	.....	.....	2,000	1,400	800
$5\frac{1}{2}$	.....	.....	.....	1,700	1,300	700
$5\frac{3}{4}$	.....	.....	.....	1,600	1,200	600
6	.....	.....	.....	1,500	1,100	550
$6\frac{1}{4}$	.....	.....	.....	1,400	1,000	500
$6\frac{1}{2}$	.....	.....	.....	1,200	1,000	450

STANDARD LENGTH OF THREADS ON OUR BOLTS

Length of Bolts	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2} \& \frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
1 to $1\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	1	1	1	.....
$1\frac{1}{2}$ to 3	$\frac{7}{8}$	1	1	1	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$
$3\frac{1}{4}$ to 6	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{3}{4}$
$6\frac{1}{4}$ to 12	.....	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	2	2	2	2
$12\frac{1}{4}$ to 20	.....	.....	.....	.....	$1\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{1}{4}$	$2\frac{1}{4}$	$2\frac{1}{2}$
20 to 30	.....	.....	.....	.....	.....	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{3}{4}$
For each additional $\frac{1}{4}$ in. of thread per 100 bolts	\$0.02	\$0.02	\$0.02 $\frac{1}{2}$	\$0.03	\$0.04	\$0.06	\$0.08	\$0.10	\$0.12

ROUND HEAD BRASS MACHINE SCREWS WITH SQUARE NUTS FOR CORNICE MAKERS' USE

Price per Gross

Length.....	$\frac{1}{2}$ Inch	$\frac{5}{8}$ Inch	$\frac{3}{4}$ Inch	1 Inch
$\frac{5}{16}$ Inch Diameter.....	\$1.85	\$1.95	\$2.05	\$.....
$\frac{1}{4}$ Inch Diameter.....	3.20	3.40	3.60	3.80



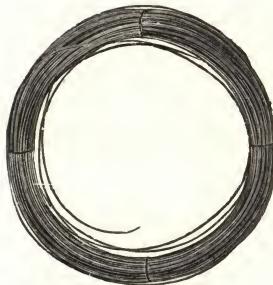
PLAIN OR FENCE WIRE

Cuts Representing Full Size of Plain Wire	Gauge	Diam. of American Steel & Wire Co.'s Gauge	Weight One Mile Pounds	Feet to Pound
	1	.2830	1128.0	4.681
	2	.2625	970.4	5.441
	3	.2437	836.4	6.313
	4	.2253	714.8	7.386
	5	.2070	603.4	8.750
	6	.1920	519.2	10.17
	7	.1770	441.2	11.97
	8	.1620	369.6	14.29
	9	.1483	309.7	17.05
	10	.1350	256.7	20.57
	11	.1205	204.5	25.82
	12	.1055	156.7	33.69
	13	.0915	117.9	44.78
	14	.0800	90.13	58.58
	15	.0720	73.01	72.32
	16	.0625	55.01	95.98
	17	.0540	41.07	128.6
	18	.0475	31.77	166.2
	19	.0410	23.67	223.0
	20	.0348	17.05	309.6

GAUGE	ADVANCE PER 100 POUNDS	
	Annealed	Galvanized (Add to price of annealed)
Nos. 9 and coarser	Base	\$0.30
10	.05	.30
11	.10	.30
12 and 12½	.15	.30
13	.25	.30
14	.35	.30
15	.45	.60
16	.55	.60
17	.70	1.00
18	.85	1.00

NOTE

Even weight bundles 5c per bundle extra, except 100-lb. bundles, which are considered standard and take no extra charge.



WIRE { **BRIGHT MARKET**
COPPERED MARKET
GALVANIZED MARKET
TINNED MARKET
COPPERED STEEL SPRING
TINNED STONE
ANNEALED STOVE PIPE

BRIGHT, COPPERED AND GALVANIZED MARKET WIRE

Nos.	0 to 9	10	11	12	13	14	15	16	17	18
Per 100 lbs....	\$....	\$....	\$....	\$....	\$....	\$....	\$....	\$....	\$....	\$....

One hundred pounds in a bundle.

TINNED MARKET

Nos.	0 to 9	10	11	12	13	14	15	16	17	18
Per 100 lbs....	\$....	\$....	\$....	\$....	\$....	\$....	\$....	\$....	\$....	\$....

Sixty-three pounds in a bundle.

COPPERED STEEL SPRING

Nos.	0 to 9	10	11	12	13	14	15	16	17	18
Per 100 lbs....	\$....	\$....	\$....	\$....	\$....	\$....	\$....	\$....	\$....	\$....

One hundred pounds in a bundle.

TINNED STONE

Nos.....	18	19&20	21&22	23&24	25	26	27	28	29	30	31	32	33	34	35	36
Cents per lb..	18½	19	20	21	22	23	24	25	26	27	28	32	33	35	40	48

Twelve pounds in a stone.

Discount.....

ANNEALED STOVE PIPE WIRE

No. 18 Per Stone.....	\$.....	No. 19 Per Stone.....	\$.....
One Stone weighs 12 pounds.			



ANNEALED COPPER WIRE

For the Royal Circles and Wired Pipe Hooks.

Put up in 1, 2 and 5 lb. Spools.

No. 20 Per pound	\$.....
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NAILS



Common.



Fence



Flooring.



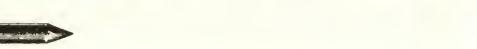
Tobacco.



Common Brad.

Shingle.

Common, Fence, Flooring, Tobacco, Common Brad and Shingle,						
Advances { 20 to 60 d Base. \$.05	10 to 16 d	8 d and 9 d	6 d and 7 d	4 d and 5d	3d	2d



Box



Casing.

Casing and Smooth Box.						
Advances { 10 d and larger \$.15	8 d and 9 d \$.25	6 d and 7 d \$.35	4 d and 5 d \$.50	3 d \$.70	2 d \$ 1.00	



Barbed Car.

Barbed Common and Barbed Car Nails,
15 cents advance over Common Nails.

Clinch.

Clinch.						
Advances { 10 d to 20 d \$.35	8 d and 9 d \$.45	6 d and 7 d \$.55	4 d and 5 d \$.65	3 d \$.85	2 d \$ 1.05	



Finishing.

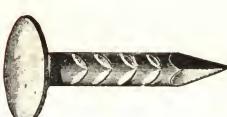
Advances.

Finishing, 10 d and larger \$.25	8 d and 9 d \$.35	6 d and 7 d \$.45	4 d and 5 d \$.65	3 d \$.85	2 d \$ 1.15
Fine, .....	.....	.....	.....	.50	1.00



Fine.

LARGE HEAD BARBED ROOFING NAILS



	No. 8 ½ in. head	No. 9 ½ in. head	No. 9½ ½ in. head	No. 10 ¾ in. head
3/4-inch	\$0.90	\$1.00	\$1.05	\$1.10
5/8-inch	.80	.90	.95	1.00
1 -inch	.70	.80	.85	.90
1 1/8-inch	.65	.75	.80	.85
1 1/4-inch	.60	.70	.75	.80
1 1/2-inch	.55	.65	.70	.75
1 3/4-inch	.50	.60	.65	.70

SPIKES**Made Only in Flat Head, Diamond Point and Oval Head Chisel Point****Oval Head, Chisel Point**

Size 6-inch, length 6-inch, gauge $\frac{1}{4}$ -inch, per 100 lbs.	\$.....
Size 7-inch, length 7-inch, gauge $\frac{1}{4}$ -inch, per 100 lbs.	.....
Size 8-inch, length 8-inch, gauge $\frac{1}{4}$ -inch, per 100 lbs.	.....
Size 9-inch, length 9-inch, gauge $\frac{1}{4}$ -inch, per 100 lbs.	.....
Size 10-inch, length 10-inch, gauge $\frac{3}{8}$ -inch, per 100 lbs.	.....
Size 12-inch, length 12-inch, gauge $\frac{3}{8}$ -inch, per 100 lbs.	.....

SLATING AND ROOFING NAILS**Barbed Roofing**

Base.....

Advances

Inches	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Barbed Roofing	\$0.75	.65	.60	.60	.55	.55	.45	.45	.35

Slating	6d	5d	4d	3d	2d
Tinned Nails, \$..... Advance. Galvanized Nails, \$..... Advance	\$0.30	.40	.40	.60	.80

**Slating****BOAT NAILS****Light****Heavy**

Size	Length	Gauge	Advance over Base Price	Size	Length	Gauge	Advance over Base Price
4d	1 $\frac{1}{2}$ in.	No. $\frac{3}{16}$	\$1.05	4d	1 $\frac{1}{2}$ in.	No. $\frac{1}{4}$	\$1.05
6d	2 in.	No. $\frac{3}{16}$	.95	6d	2 in.	No. $\frac{1}{4}$	.95
9d	2 $\frac{1}{2}$ in.	No. $\frac{3}{16}$	.85	8d	2 $\frac{1}{2}$ in.	No. $\frac{1}{4}$	.85
10d	3 in.	No. $\frac{1}{4}$	.75	10d	3 in.	No. $\frac{3}{8}$	.75
12d	3 $\frac{1}{4}$ in.	No. $\frac{1}{4}$	.75	12d	3 $\frac{1}{4}$ in.	No. $\frac{3}{8}$	.75
16d	3 $\frac{1}{2}$ in.	No. $\frac{1}{4}$	.75	16d	3 $\frac{1}{2}$ in.	No. $\frac{3}{8}$	.75
20d	4 in.	No. $\frac{1}{4}$	.75	20d	4 in.	No. $\frac{3}{8}$	.75

COPPER WIRE SLATING AND SHINGLE NAILS**Large Heads**

Packed in Kegs Containing 100 Pounds.

Also in Paper Boxes Containing 5 Pounds.

$\frac{7}{8}$ in. long.....	No. 12 Stubs' Gauge
1 in. long.....	No. 12 Stubs' Gauge
1 $\frac{1}{4}$ in. long.....	No. 10 Stubs' Gauge
1 $\frac{1}{4}$ in. long.....	No. 11 Stubs' Gauge
1 $\frac{1}{4}$ in. long.....	No. 12 Stubs Gauge
1 $\frac{1}{2}$ in. long.....	No. 10 Stubs' Gauge
1 $\frac{1}{2}$ in. long.....	No. 11 Stubs' Gauge
1 $\frac{1}{2}$ in. long.....	No. 12 Stubs' Gauge
$\frac{3}{4}$ in. barbed copper rfg. nails, No. 14 gauge; per pound	\$.....
$\frac{3}{8}$ in. barbed copper rfg. nails, No. 12 gauge, per pound .....	.....
$\frac{3}{8}$ in. barbed copper rfg. nails, No. 14 gauge, per pound .....	.....

Copper Slating**Copper Cut Slating**

APPROXIMATE NUMBER OF WIRE NAILS PER POUND

Wire Gage	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8	9	10	11	12					
$\frac{3}{8}$	33	27	23	20	18	16	15	14	12	10	9	8	7	6	5	4	3 $\frac{1}{2}$	3 $\frac{1}{4}$			
0	34	29	25	21	19	17	16	15	13	10	9	8	7	6	5	4	3 $\frac{1}{2}$	4			
$\frac{1}{16}$	57	50	45	38	32	28	25	23	21	19	16	14	13	11	10	8	7	6			
2	65	58	52	44	37	32	29	26	24	22	19	16	14	13	11	9	8	7			
3	100	87	76	67	60	50	43	38	34	30	28	25	22	19	17	15	13	11			
4	120	103	90	80	72	60	51	45	40	36	33	30	26	23	20	18	15	13			
5	141	121	106	94	85	71	60	53	47	42	39	35	30	26	24	21	18	15	13		
6	169	141	123	111	99	82	71	62	55	50	45	41	35	31	28	25	21	18	15		
7	164	141	123	111	100	85	75	67	60	54	50	43	37	33	30	25	21	18	15		
8	200	171	149	133	120	100	85	75	67	60	54	50	43	37	33	30	25	21	18		
9	175	149	122	107	137	115	98	86	76	69	62	57	49	43	39	35	29	21	18		
10	226	207	184	165	138	118	103	92	82	75	69	59	52	46	41	35	30	25	21		
11	331	303	283	248	220	198	165	142	124	110	99	90	83	71	62	55	50	45	41	35	
12	337	302	282	248	220	198	165	142	124	110	99	90	83	71	62	55	50	45	41	35	
13	1096	822	658	548	459	411	365	329	274	235	204	182	164	149	137	117	103	90	70	50	
14	1029	857	714	613	536	476	429	357	306	268	238	214	195	178	153	130	103	70	50		
15	1136	947	811	710	631	568	473	406	350	315	284	258	236	206	178	153	130	103	70	50	
16	1136	947	811	710	631	568	473	406	350	315	284	258	236	206	178	153	130	103	70	50	
17	1402	1168	1001	876	778	701	584	500	438	389	350	320	280	240	200	160	120	80	50	30	10
18	1402	1168	1001	876	778	701	584	500	438	389	350	320	280	240	200	160	120	80	50	30	10
19	1428	1143	1015	913	761	653	571	508	438	389	350	320	280	240	200	160	120	80	50	30	10
20	1428	1143	1015	913	761	653	571	508	438	389	350	320	280	240	200	160	120	80	50	30	10
21	1428	1143	1015	913	761	653	571	508	438	389	350	320	280	240	200	160	120	80	50	30	10
22	1428	1143	1015	913	761	653	571	508	438	389	350	320	280	240	200	160	120	80	50	30	10

These approximate numbers are an AVERAGE only, and the figures given may be varied either way, by changes in the dimensions of the heads or points. Brads and no-head nails will run more to the pound than table shows, and large or thick-headed nails will run less.

SPUN METAL BALLS



12 Inch.



8 Inch.



4 Inch.



2 1/2 Inch.

PRICE LIST—HALF BALLS

		Copper	Zinc
1 inch, per hundred....	\$ 1.50	\$ 1.00	
2 " " "	4.15	2.20	
3 " " "	8.00	3.20	
4 " " "	12.67	5.50	
5 " " "	18.00	7.70	
6 " " "	25.50	11.70	
7 " " " .....	.....	14.00	
8 " " " .....	.....	18.35	
9 " " " .....	.....	21.00	
10 " " " .....	.....	26.35	

Discount per cent.

SNOW GUARDS



Niksah No. 1—our standard guard—is made from commercial steel-galvanized wire of great strength and durability.

Niksah No. 2 is of unalloyed copper wire, in form and size exactly like No. 1. This guard is especially desirable for localities where smoke and gases might in time corrode the steel guard.

Niksah No. 3 is a steel guard, and differs from No. 1 only in having a two-inch point. It is useful where slate is laid over shingles.

The Niksah guard for old roofs can easily be put in place, and renders effective service. This guard is known as Niksah No. 4. It is made only in steel-galvanized wire.

Price Per 1000

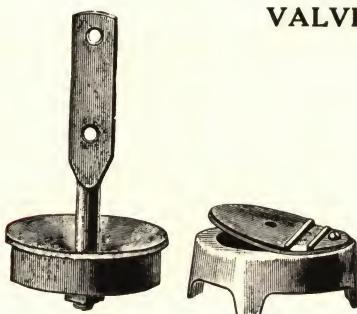
No. 1 Steel galvanized, 1-inch points.....	\$ 9.00
Regalvanized after making, extra.....	1.50
No. 3 Steel galvanized, 2-inch points, for slate laid over shingles or for flat tile roofs.....	10.00
Regalvanized after making, extra.....	1.50
No. 4 Regalvanized for old roofs.....	10.00
No. 2 Copper (solid) 1-inch points.....	30.00
No. 8 Duplex copper, 1-inch points.....	25.00
No. 11 Duplex copper, for old roofs.....	20.00
Steel galvanized slate hooks, used to lay slate without nails, in 25-pound boxes per pound .....	.08

Duplex copper wire (patented) is made with a heavy coating of copper, welded to a steel core, giving durability of copper and stiffness of steel.

Free samples showing thickness of copper.

Freight prepaid on factory shipments of 1,000 guards or over. Slate hooks, f. o. b. factory.

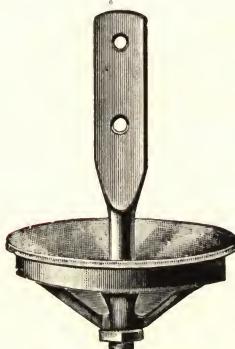
VALVES AND PLUNGERS



OIL VALVES AND PLUNGERS

	Oil Valves	Plungers
1 inch, per dozen pairs.....	\$.90	\$.60
1 1/4 inch, " "	.90	.60
1 1/2 inch, " "	1.05	.70
1 3/4 inch, " "	1.20	.80
2 inch, " "	1.35	.90

Discount.....per cent.



Improved Plunger

IMPROVED PLUNGERS

2 1/2 inch, per dozen.....	\$1.50
3 inch, " "	2.00
3 1/2 inch, " "	2.50
4 inch, " "	2.75

Discount.....per cent.



Leather Plunger

LEATHER PLUNGERS FOR BOAT PUMPS

2 inch, per dozen.....	\$1.30
2 1/2 inch, " "	1.65
3 inch, " "	2.00
3 1/2 inch, " "	2.40
4 inch, " "	2.80
4 1/2 inch, " "	4.00
5 inch, " "	5.00
5 1/2 inch, " "	6.00
6 inch, " "	7.00

Discount.....per cent.

All sizes always in stock.

In making these, the very best materials only are used, and they are as near perfect as is possible to make them. The rubber used is of the purest and best quality, and the leather is of the best grade.

All plungers are made of leather. All valves up to 2 inch made of leather. All valves 2 inch and larger made of rubber.

VALVES AND PLUNGERS**PUMP VALVES**

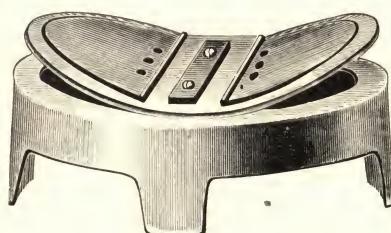
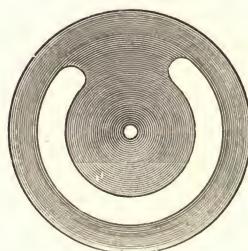
2½ inch.....	per doz., \$2.00
3 inch.....	" 2.25
3½ inch.....	" 2.75
4 inch.....	" 3.25

Discount.....per cent.

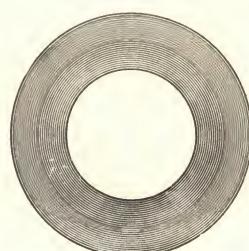
**DOUBLE CLAPPER VALVES**

4 inch.....	per doz., \$3.75
4½ inch.....	" 5.00
5 inch.....	" 6.00
5½ inch.....	" 7.00
6 inch.....	" 8.50

Discount.....per cent.

**PUMP LEATHERS**

No. B or Lower Leather

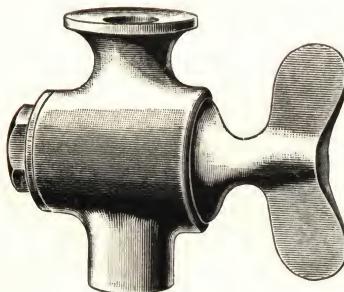


No. A or Upper Leather

No. 1.....	per doz., \$.....
No. 2.....	" "
No. 3.....	" "
No. 4.....	" "

No. 1.....	per doz., \$.....
No. 2.....	" "
No. 3.....	" "
No. 4.....	" "

FAUCETS

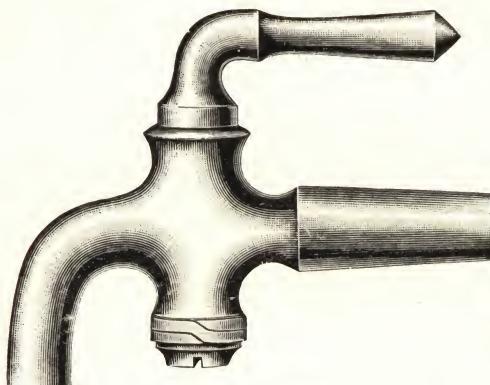
**1/2-INCH OMEGA FAUCET**

Cut 2-3 size.

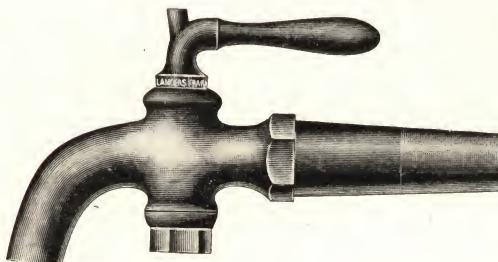
Per dozen \$.....

PLAIN BRASS BIBBS

No. 231. Cut 2-3 size. Polished.

**Tinned Shank**

Nos.	230	231	232	233	234	235
Inches	1/4	3/8	1/2	5/8	3/4	1
Finished, per dozen.....	\$20.40	21.60	22.80	30.60	36.60	51.00

PETROLEUM OIL FAUCETS**Lever Handle—Black Japanned—Tinned Shank**

Nos.	013	014	05	06	07
Inches	3/8	1/2	5/8	3/4	1
Per dozen	\$10.00	11.00	13.00	16.00	23.00

Packed half-dozen in a paper box. Six dozen in a case.



BELL TOP COMPRESSION FAUCET

Cut 2-3 size.

$\frac{9}{16}$ inch carried in stock.

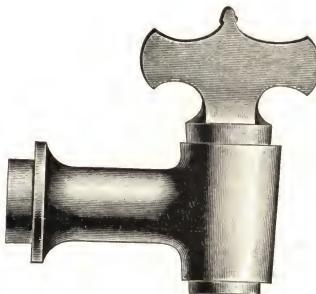
Per dozen \$....

ANGLE PLUG

This cut shows the $\frac{3}{8}$ angle plug in $\frac{2}{3}$ size.

Brass, per dozen \$....

Malleable, Nickeled White
per dozen \$....



COMMON MILK CAN FAUCET

We carry the $\frac{5}{8}$ inch faucet in stock.

Per dozen \$....

The No. 1 screw shank lever faucet is the same style as the common milk can faucet.

Per dozen \$....

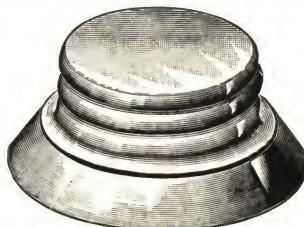
STAR FAUCET

This faucet is made in $\frac{3}{8}$ and is made to fit close to the can.

Per dozen \$....



REGULAR DEEP TIN CAN SCREWS



Packed in pasteboard boxes, one-half gross to the box.
Regular Deep Tin Can Screws

Size	Diameter Top of Cap	Diameter Bottom of Base	Total Height	Weight per Gross in Paper Boxes	Stock Number	Price per Gross Bulk	Price per Gross Boxed
$\frac{1}{2}$	$\frac{5}{8}$	$1\frac{1}{8}$	$5\frac{5}{8}$	$1\frac{1}{2}$	1	\$0.95	\$1.00
$\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{4}$	$7\frac{9}{16}$	$1\frac{3}{4}$	2	1.10	1.20
1	1	$1\frac{9}{16}$	$5\frac{5}{8}$	$2\frac{3}{4}$	3	1.15	1.25
$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{13}{16}$	$3\frac{3}{4}$	$3\frac{1}{2}$	4	1.85	1.95
$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$\frac{3}{4}$	5	5	2.10	2.20
$1\frac{3}{4}$	$1\frac{3}{4}$	$2\frac{1}{2}$	$7\frac{7}{8}$	$7\frac{3}{4}$	6	3.00	3.10
2	$2\frac{1}{8}$	$2\frac{1}{16}$	$7\frac{7}{8}$	$8\frac{1}{4}$	7	4.10	4.25

REGULAR DEEP CAN SCREWS
BRASS AND ZINC

Packed in pasteboard boxes, one-half gross to the box.
Regular Deep Zinc Can Screws

Size	Diameter Top of Cap	Diameter Bottom of Base	Total Height	Weight per Gross in Paper Boxes	Stock Number	Price per Gross
$\frac{1}{2}$	$\frac{5}{8}$	$1\frac{1}{4}$	$\frac{3}{4}$	$2\frac{1}{2}$	8	\$4.00
$\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{16}$	$7\frac{7}{8}$	$3\frac{1}{4}$	9	4.50
1	1	$1\frac{5}{8}$	$\frac{7}{8}$	$4\frac{1}{4}$	10	6.00
$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{7}{8}$	1	$5\frac{1}{2}$	11	8.00
$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$1\frac{1}{16}$	$7\frac{1}{2}$	12	12.00
$1\frac{3}{4}$	$1\frac{3}{4}$	$2\frac{3}{8}$	$1\frac{1}{8}$	$10\frac{1}{2}$	13	16.00
2	2	$2\frac{1}{4}$	$1\frac{1}{16}$	$12\frac{1}{2}$	14	20.00

Regular Deep Brass Can Screws

Size	Diameter Top of Cap	Diameter Bottom of Base	Total Height	Weight per Gross in Paper Boxes	Stock Number	Price per Gross
$\frac{1}{2}$	$\frac{5}{8}$	$1\frac{1}{4}$	$\frac{11}{16}$	$2\frac{1}{2}$	15	\$4.50
$\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{8}$	$\frac{3}{4}$	$3\frac{1}{2}$	16	5.50
1	1	$1\frac{1}{16}$	$\frac{7}{8}$	5	17	7.50
$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{7}{8}$	1	$6\frac{1}{4}$	18	10.00
$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{3}{8}$	$1\frac{1}{16}$	$8\frac{3}{4}$	19	13.00
$1\frac{3}{4}$	$1\frac{3}{4}$	$2\frac{7}{8}$	$1\frac{1}{8}$	$11\frac{3}{4}$	20	17.00
2	2	$2\frac{1}{8}$	$1\frac{1}{8}$	$13\frac{1}{2}$	21	21.00

Discount Tin.....per cent.

Brass.....per cent.

Zinc.....per cent.

DEEP CAN SCREWS, CORK LINED
REGULAR DEEP TIN SCREWS, CORK LINED



Size	Diam. Top of Cap	Diam. Base	Total Height	Weight per Gross in Paper Boxes	Stock Number	Price per Gross Bulk	Price per Gross Boxed
$\frac{1}{2}$	$\frac{5}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{2}$	22	\$1.20	\$1.25
$\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{4}$	$5\frac{1}{8}$	$1\frac{3}{4}$	23	1.50	1.55
1	1	$1\frac{7}{8}$	$5\frac{1}{8}$	$2\frac{3}{4}$	24	1.60	1.65
$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{13}{16}$	$1\frac{13}{16}$	$3\frac{1}{2}$	25	2.35	2.45
$1\frac{1}{2}$	$1\frac{1}{2}$	2	$5\frac{1}{8}$	5	26	3.00	3.10
$1\frac{3}{4}$	$1\frac{3}{4}$	$2\frac{1}{2}$	$1\frac{13}{16}$	$7\frac{3}{4}$	27	4.00	4.15
2	$2\frac{1}{8}$	$2\frac{1}{8}$	$1\frac{1}{8}$	$8\frac{1}{4}$	28	5.45	5.70

Discount.....per cent.

DEEP CAN SCREWS, CORK LINED
COFFEE FLASK TIN SCREWS, CORK LINED



Tin Coffee Flask

Size	Diam. Top of Cap	Diam. Base	Total Height	Weight per Gross Bulk	Stock Number	Price per Gross Bulk	Price per Gross Boxed
$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$5\frac{1}{8}$	$\frac{3}{4}$	43	\$1.30	\$1.40
$\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{8}$	$\frac{3}{4}$	$1\frac{1}{4}$	44	1.50	1.60
1	1	$1\frac{3}{8}$	$5\frac{1}{8}$	$2\frac{1}{4}$	45	1.95	2.10
$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{7}{8}$	$\frac{3}{4}$	3	46	2.25	2.30
$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{11}{16}$	$\frac{3}{4}$	$3\frac{3}{4}$	47	3.10	3.25

Discount.....per cent.

STRAIGHT DEEP TIN SCREWS, CORK LINED



Straight Tin

Size	Diam. Cap	Diam. Base	Total Height	Net Weight per Gross Bulk	Stock Number	Price per Gross in Bulk
$\frac{1}{2}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{9}{16}$	$\frac{3}{4}$	112	\$1.10
$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$5\frac{1}{8}$	$1\frac{1}{4}$	113	1.50
1	1	1	$5\frac{1}{8}$	$2\frac{1}{4}$	114	1.70
$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$\frac{3}{4}$	3	115	2.35
$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{7}{8}$	$\frac{7}{8}$	$3\frac{3}{4}$	116	3.10

Discount.....per cent.

SHALLOW FLAT FLANGE TIN AND ZINC SCREWS



Size	Diam. Cap.	Diam. Base Flange	Total Height	Tin			Zinc		
				Weight per Gross Bulk	Stock No.	Price per Gross	Weight per Gross Bulk	Stock No.	Price per Gross
½	5/8	1 1/8	1/2	3/4	61	\$.85	1	117	\$ 1.35
¾	3/4	1 3/8	7/8	2 1/4	62	1.05	2 3/4	118	1.40
1	1	1 1/8	7/8	2 3/4	63	1.20	3 1/2	119	1.50
1 1/8	1 1/8	1 11/16	7/8	3	64	1.30	3 3/4	120	1.55
1 1/4	1 1/4	2	7/8	3	65	1.55	3 3/4	121	2.10
1 1/2	1 1/2	2 1/8	3/8	3 3/4	66	2.00	4 1/2	122	2.50
1 3/4	1 3/4	2 3/8	3/8	4 1/4	67	2.10	5 1/4	123	2.85
2	2	2 5/8	7/8	4 1/2	68	2.40	5 1/2	124	3.45
2 1/2	2 3/8	3 1/8	7/8	6	69	3.35	7 1/4	125	4.20
3	2 7/8	3 5/8	1/2	9	70	4.45	11	126	7.05
3 1/2	3 5/8	4 11/16	9/16	13 1/2	71	5.20	16 1/4	127	8.40
3 3/4	3 3/4	4 5/8	9/16	13 1/2	72	5.80	16 1/4	128	9.90
4	4	4 7/8	9/16	15	73	6.80	18	129	10.50
5	5	5 1/8	9/16	23	74	11.75	28	130	16.05
6	6	7	5/8	30	75	13.60	36	131	18.50
8	8	9	1 9/16	48	76	21.75	58	132	33.30
8	8	8 13/16	1 3/8	66	77	23.10	80	133	35.80

Discount Tin.....per cent.

Zinc.....per cent.



For Pitch or Cone Top Cans with Cork Lined Screw

Stock No. 480

Total length 2 3/4 in.
 Diameter of screw 1 9/16 in.
 Weight per gross 4 1/2 lbs.
 Price per gross \$3.30



For Flat Top Cans with Cork Lined Screw

Stock No. 487

Total length 3 in.
 Diameter of screw 1 9/16 in.
 Weight per gross 4 1/2 lbs.
 Price per gross \$3.30

Discount.....per cent.

STANDARD SPEAKING TUBE

Made of Bright Tin

Price List

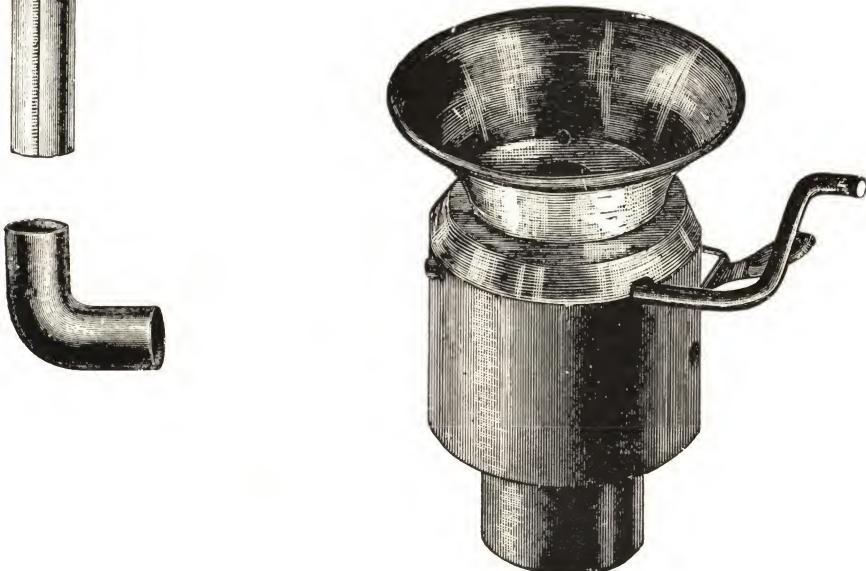
1 inch, per foot.....	\$0.03
1 inch stamped elbows, per dozen.....	.90

Discount.....per cent.

SPEAKING TUBE WHISTLES

With indicator, porcelain, per dozen.....	\$4.50
With indicator, nickeled, per dozen.....	7.00

Discount.....per cent.

THE ROUND SPEAKING TUBE WHISTLE

SUPPLIES



FAIRMONT CREAM CAN GAUGE—GLASS

Inches	6	8
Per 100.....	\$.....	\$.....

BLACK ENAMELED WOOD HANDLES

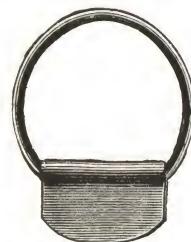


1 gross in a box		
Inches	$3\frac{1}{2} \times 7\frac{1}{8}$	$4 \times 1\frac{1}{8}$
Per gross.....	\$.....	\$.....

COPPERED WIRE RINGS WITH CLIPS

1 gross in a box

Inches	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
Per hundred gross.....	\$33.75	43.75	55.00	65.00

Discount.....per cent.

WROUGHT IRON DISH PAN HANDLES—TINNED

Inches	2	3
Per gross, tinned.....	\$1.20	\$1.60

Discount.....per cent.

Other sizes made to order.

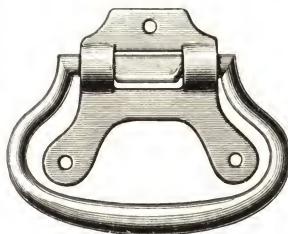
BOILER HANDLES

Coppered or Japanned

Inches	$3\frac{1}{2}$	4
Lbs. per gross.....	$23\frac{1}{2}$	30
Per lb.	\$.....	\$.....



DROP BOILER HANDLES



Two dozen in a box

No.	3575 A	B	C
Japanned, per lb., bulk.....	\$0.18	\$0.18	\$0.18
Tinned, per lb., bulk.....	.20	.20	.20
Japanned, per gross, boxed.....	4.10	6.40	7.20
Tinned, per gross, boxed.....	4.50	7.10	8.00

Discount.....per cent.

OSBORN'S BOILER HANDLES

The highest quality and finest finish possible.
Every handle guaranteed.

Price, per dozen..... \$.....
Price, per gross.....



**BLACK ENAMELED KNOBS
WITH RIVETS**

One gross in a box

No. 62
Per gross..... \$.....

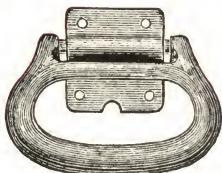
**ENAMELED REPAIR KNOBS**

Three sizes, assorted, complete with bolt, nut and washer.
Packed one gross in a box.

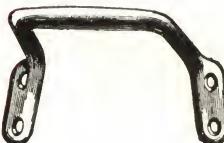
Price, per gross..... \$.....

LID HANDLES

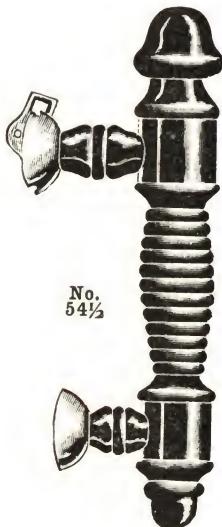
	Per Dozen	Gross
3 -inch, tinned	\$0.15	\$1.50
3½-inch, tinned .....	.20	2.25
4 -inch, tinned .....	.25	3.00

**GUARD DROP HANDLES**

	Per Dozen	Gross
3½-inch, tinned	\$0.70	\$ 8.00
4 -inch, tinned	1.00	12.00

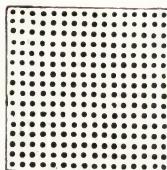
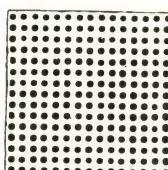
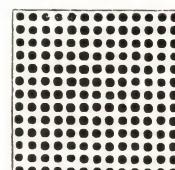
**ASH CAN HANDLES**

	Per Dozen	Gross
3½-inch, tinned	\$0.45	\$5.00
4 -inch, tinned .....	.70	8.00

ENAMELED COFFEE POT HANDLES

No. 50, medium size, for straight pot, ears for soldering, per dozen..... \$.....
 No. 50½, medium size, for slanting pot, ears for soldering, per dozen.....
 No. 54½, medium size, with hinge and ear for soldering, per dozen.....

Packed one dozen in a box.

SUPPLIES**PERFORATED TIN****No. 1****No. 2****No. 3**

Perforations, per inch.....

Ex. Fine

18

Fine

15

Medium

12

Price, per dozen sheets.....

\$.....

.....

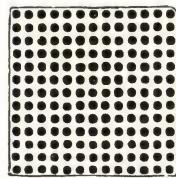
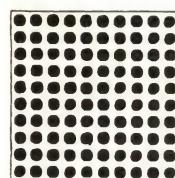
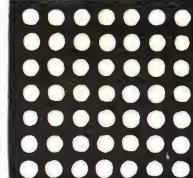
.....

Price, per box of 112 sheets.....

.....

.....

.....

**No. 4****No. 5****No. 6**

Perforations, per inch.....

Coarse

10

Med.

8

Coarse

6

Price, per dozen sheets.....

\$.....

.....

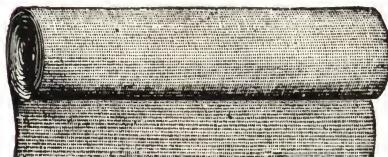
.....

Price, per box of 112 sheets.....

.....

.....

.....

BRASS STRAINER CLOTH**Lindsay Make**

Mesh	No. Wire	Net per roll
40	36	\$....
50	36	....
60	37	....

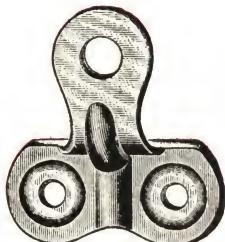
In rolls 12 inches wide, 5 ft. long.

ZINC SPRINKLER ROSES

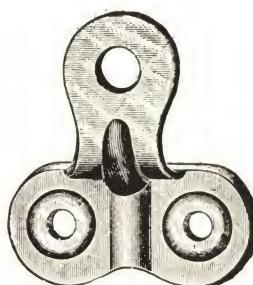
	Per doz.	Per gro.
2½ inch.....	\$....	\$....
3 inch.....
3½ inch.....
4 inch.....

One dozen in a box.

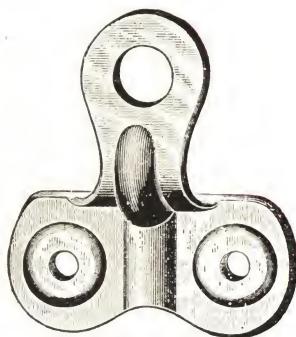
WROUGHT STAR EARS



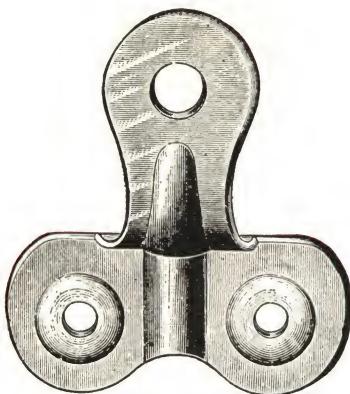
No. 20



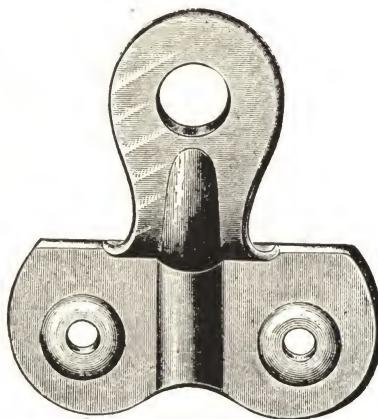
No. 30



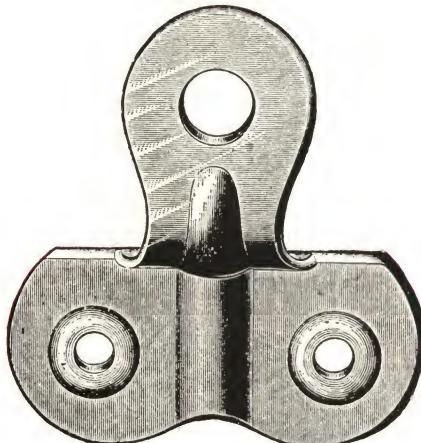
No. 40



No. 50



No. 60



No. 70

Same size and thickness as malleable.
All perfectly even. The finest ear that
can be made.

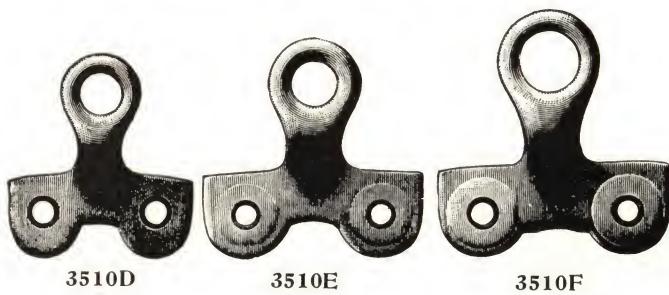
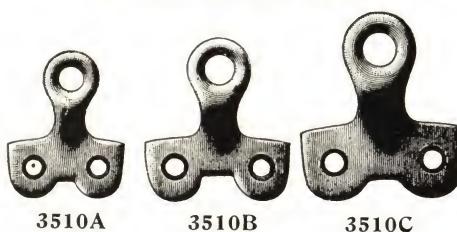
Price per Gross Tinned

No. 20.....	\$0.60
No. 30.....	.75
No. 40.....	1.00
No. 50.....	1.30
No. 60.....	1.60
No. 70.....	2.25

Discount.....per cent.

We can furnish sizes 30, 40, 50 and 60 stamped from sheet brass.

MALLEABLE EARS



(Malleable)

MEDIUM PATTERN

No. 3510A, $\frac{7}{8} \times 1\frac{1}{8}$, per gross.....	\$0.36
No. 3510B, $1\frac{1}{8} \times 1\frac{1}{4}$, per gross.....	.60
No. 3510C, $1\frac{1}{4} \times 1\frac{3}{8}$, per gross.....	.80
No. 3510D, $1\frac{1}{8} \times 1\frac{1}{2}$, per gross.....	1.00
No. 3510E, $1\frac{5}{8} \times 1\frac{3}{4}$, per gross.....	1.50
No. 3510F, $1\frac{3}{4} \times 1\frac{7}{8}$, per gross.....	1.80

Packed one single gross in a box.

HEAVY PATTERN

No. 3515	A	B	C	D
Size, inches	$1\frac{7}{8} \times 1\frac{5}{8}$	$1\frac{1}{2} \times 2$	$2 \times 2\frac{5}{8}$	$2\frac{1}{4} \times 2\frac{3}{4}$
Tinned, per gross, boxed	\$1.75	\$2.25	\$3.90	\$5.40

Half-gross in a box.

Discount.....per cent.



NICKEL-PLATED TEA KETTLE EARS

Price per dozen Ears.....\$.....

METAL FINISHING CORNERS

Made from D4X Charcoal Bright tin plate and used to cover the top wired corners of pans, etc., where the wire would otherwise be exposed. They are strong, durable, and make an attractive finish.

Price Per dozen, \$..... Per gross, \$.....



FLANGED HEADS



We are now prepared to furnish flanged heads, made from black or galvanized sheets or tin plate, used extensively in the manufacture of cans, buoys, etc. The flange is about $\frac{1}{8}$ -inch deep.

3 inch Galv. Head..... Per 1000, \$.....
Other sizes quoted on application.

FRUIT CAN TOPS AND BOTTOMS

Quarts				
Inches				1
Per gross			$4\frac{1}{4}$	\$.....



SYRUP CAN TOPS AND BOTTOMS

WITH TRIMMING FOR GALLON CANS

6 $\frac{1}{4}$ -inch Round Tops and Bottoms....	Per 100, \$.....
Wire Handles and Clips.....	Per 100, \$.....
1 $\frac{3}{4}$ -inch Lined Screws	Per 100, \$.....
Sets, complete	Per 100, \$.....

CARPENTERS' CHALK



Carpenters' White Hemispherical Chalk, per gross.....	\$1.25
Carpenters' Red Hemispherical Chalk, per gross.....	1.40
Carpenters' Blue Hemispherical Chalk, per gross.....	1.75

Half gross in a box.

GALVANIZED AND TERNE TIN FLASHING

Made of either galvanized steel or Terne tin, either flat or bent lengthwise through center.



List Prices

	Terne Tin	Galvanized
4 x 5 flat, per hundred.....	\$1.00	\$1.25
5 x 7 flat, per hundred.....	1.50	1.75
7 x 10 flat, per hundred.....	3.00	3.50
4 x 5 bent, per hundred.....	1.25	1.50
5 x 7 bent, per hundred.....	1.75	2.00
7 x 10 bent, per hundred.....	3.50	4.00

Packed in boxes containing 500.

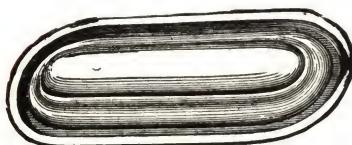
We also make galvanized steel or Terne tin flashing in 10-foot lengths, either flat or bent lengthwise through center.

BOILER RODS



$\frac{3}{16}$ -inch, random lengths, 100-pound bundles, per 100 pounds.....	\$.....
$\frac{1}{4}$ -inch, random lengths, 100-pound bundles, per 100 pounds.....	\$.....

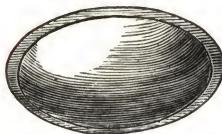
OVAL BOILER COVERS



No.	7	8	9
Size	9 $\frac{5}{8}$ x 18 $\frac{1}{2}$	10 $\frac{3}{4}$ x 20 $\frac{5}{8}$	12 x 22 $\frac{1}{2}$
Price, dozen	\$....	\$....	\$....
Price, gross	\$....	\$....	\$....

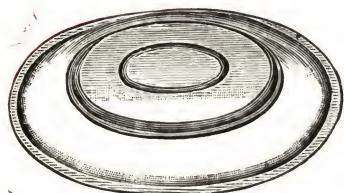
Our Boiler Covers are all hemmed.

COFFEE POT COVERS—PLAIN



Inches..	3	3 $\frac{1}{8}$	3 $\frac{3}{8}$	3 $\frac{5}{8}$	3 $\frac{1}{2}$	3 $\frac{5}{8}$
Per doz.	\$....	\$....	\$....	\$....	\$....	\$....
Inches..	3 $\frac{3}{4}$	4	4 $\frac{1}{8}$	4 $\frac{1}{4}$	4 $\frac{1}{2}$	4 $\frac{5}{8}$
Per doz.	\$....	\$....	\$....	\$....	\$....	\$....
Inches..	4 $\frac{3}{4}$	5	5 $\frac{1}{8}$	5 $\frac{1}{6}$	5 $\frac{9}{16}$	5 $\frac{7}{8}$
Per doz.	\$....	\$....	\$....	\$....	\$....	\$....

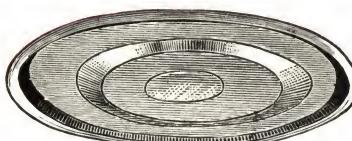
PLAIN BUCKET COVERS—ROUND



Inches..	5 $\frac{1}{2}$	6 $\frac{1}{8}$	6 $\frac{5}{6}$	6 $\frac{1}{2}$
Quarts..	2	2	2	2
1c per doz.	\$....	\$....	\$....	\$....
Inches..	6 $\frac{5}{8}$	6 $\frac{7}{8}$	7	7 $\frac{1}{2}$
Quarts..	3	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4
1c per doz.	\$....	\$....	\$....	\$....
Inches..	8 $\frac{5}{8}$	8 $\frac{5}{8}$	8 $\frac{13}{16}$	8 $\frac{15}{16}$
Quarts..	5	6	6	7
1c per doz.	\$....	\$....	\$....	\$....
Inches..	9 $\frac{1}{2}$	10 $\frac{1}{2}$	11 $\frac{1}{2}$	12 $\frac{1}{2}$
Quarts..	10	12	14	16
1c per doz.	\$....	\$....	\$....	\$....
1x per doz.	\$....	\$....	\$....	\$....

PLAIN POT COVERS—1C

PLAIN EDGES



One dozen in a package.

Inches	8 $\frac{1}{2}$	8 $\frac{3}{4}$	9	9 $\frac{1}{4}$
Per dozen	\$....	\$....	\$....	\$....
Inches	9 $\frac{1}{2}$	9 $\frac{3}{4}$	10	10 $\frac{1}{4}$
Per dozen	\$....	\$....	\$....	\$....
Inches	10 $\frac{1}{2}$	10 $\frac{3}{4}$	11	11 $\frac{1}{4}$
Per dozen	\$....	\$....	\$....	\$....
Inches	11 $\frac{1}{2}$	11 $\frac{3}{4}$	12	12 $\frac{1}{4}$
Per dozen	\$....	\$....	\$....	\$....
Inches	12 $\frac{1}{2}$	12 $\frac{3}{4}$	13	
Per dozen	\$....	\$....	\$....	\$....

Section 5

Furnace Pipe and Registers

Double Wall Pipe

Single Wall Pipe

Round Pipe

Fittings

Furnace Cement

Asbestos Paper

Paste Flour

Hot Air Dampers

Damper Clips

Chains

Pulleys, etc.

Cast Registers

Steel Registers

Semi-Steel Registers

Borders and Faces

Side Wall Registers

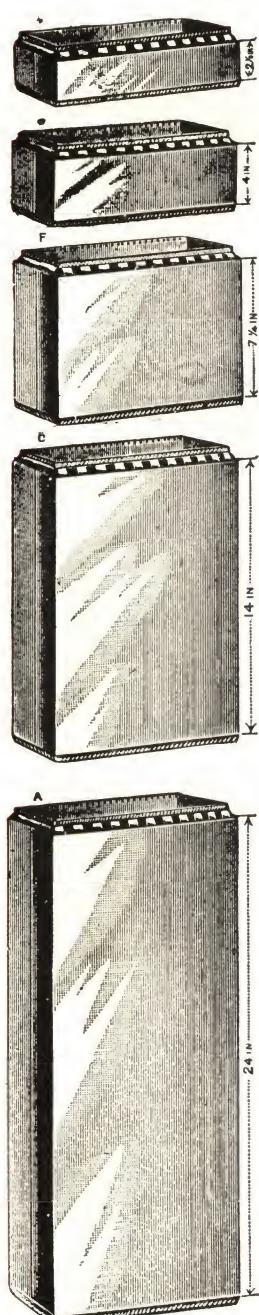
Jones Side Wall Registers

Auer Side Wall Registers

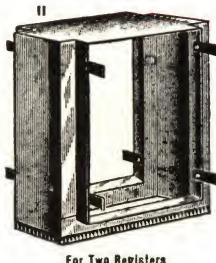
Wood Register Faces

We carry in stock "Perfection" Double Wall Pipe and Fittings and manufacture our own Single Wall Pipe, Round Pipe, Elbows, etc. We also make special fittings to order. Our stock of registers is complete, which enables us to make prompt shipment of any size or design.

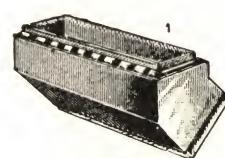
DOUBLE WALL PIPE AND FITTINGS



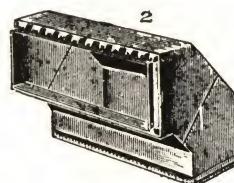
WALL REGISTER BOX



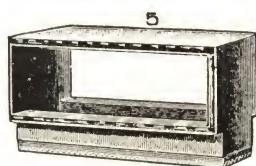
For Two Registers



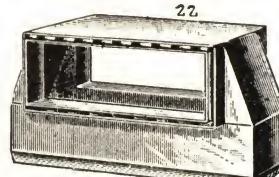
Angle 45 Degrees



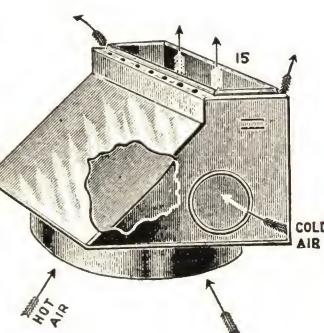
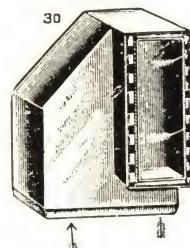
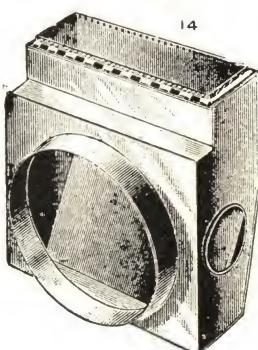
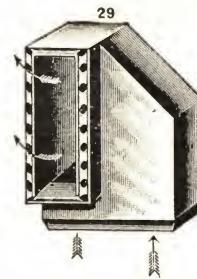
Elbow Two Pieced



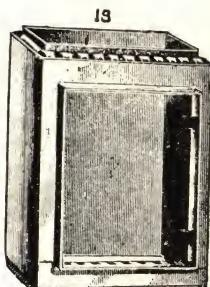
Tee



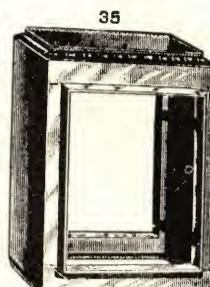
Reduced from 8 to 7, 10 to 8, &c.



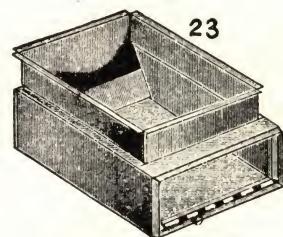
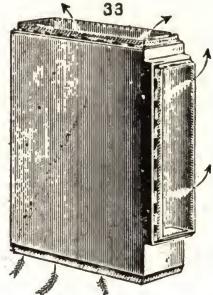
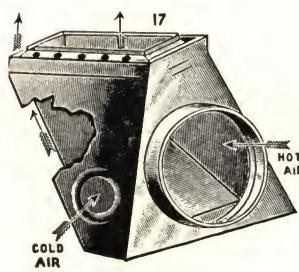
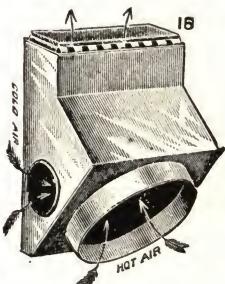
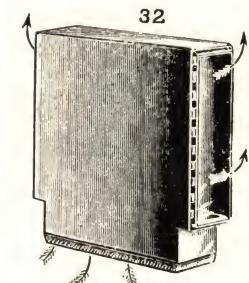
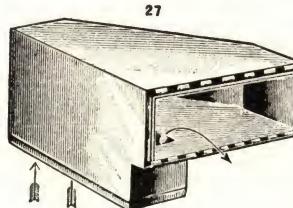
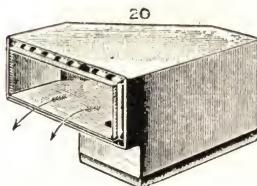
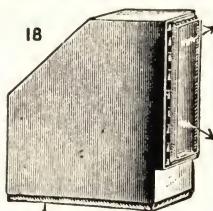
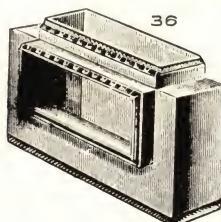
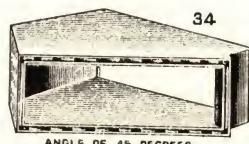
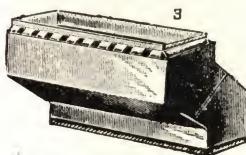
DOUBLE WALL PIPE AND FITTINGS



Through Box for one Register



THROUGH BOX FOR TWO REGISTERS

Register Box for Second Floor.
To fit opening of border, unless otherwise specified.

DOUBLE WALL PIPE AND FITTINGS

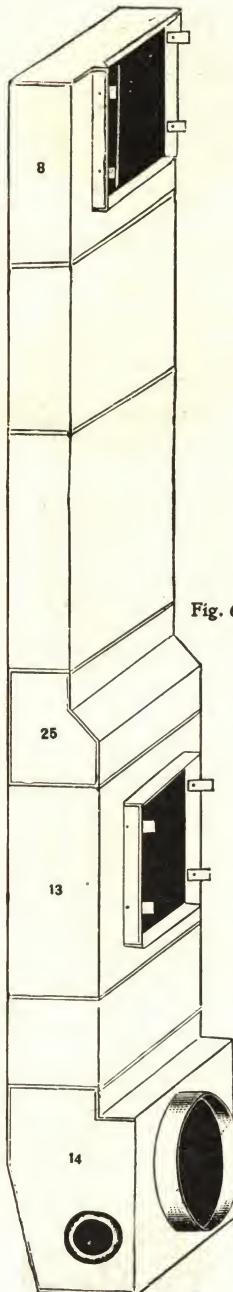
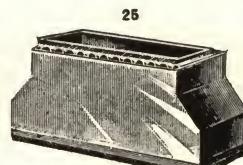
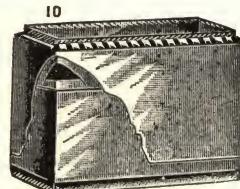


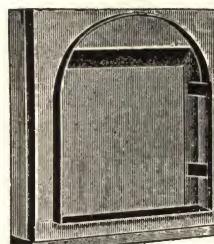
Fig. 65

Reducer
No. 8 to 7, 10 to 8, etc.

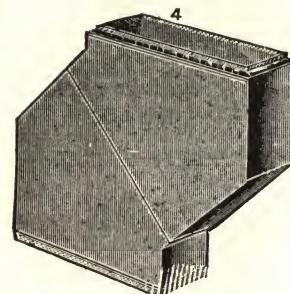
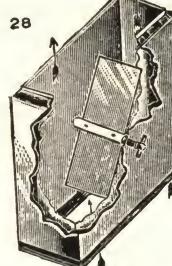
38



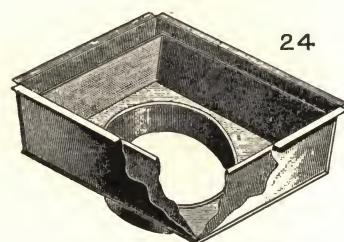
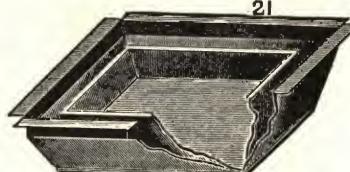
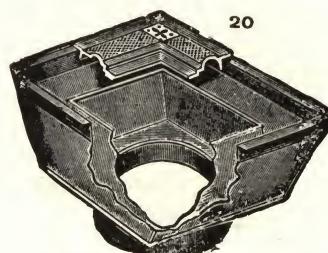
Adj. Joint.



For Circle Top Register.



24

Double Register Box for First Floor.
For inside of Border.Double Register Box for Floor.
Without Collar, see Figs. 55, 68 and 72.

Double Register Box for First Floor.

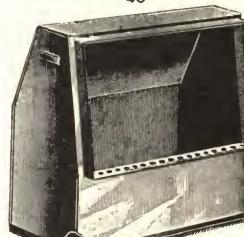
PRICE LIST OF
REGISTER BOXES

Size	Size of Collar, In.	Area of Pipe	Figs.	
			21	24
8x10	8	50	1.15	1.00
8x12	8	....	1.20	1.05
9x12	9	63	1.25	1.10
10x12	10	78½	1.30	1.15
10x14	10	...	1.35	1.25
12x15	12	114	1.45	1.35
14x16	14	153	1.70	1.50

Baseboard Boxes and Fittings for First Floor

For cuts 100, 101, Hart & Cooley's, Tuttle & Bailey's, Ferrosteel and other leading makes of Registers.

40



BOX FOR ONE REGISTER

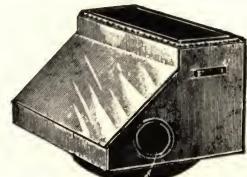
E



14

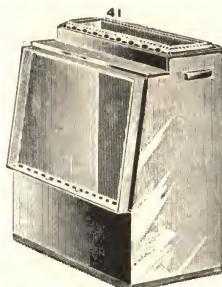


15



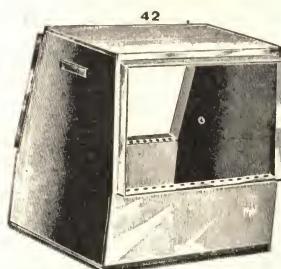
FOOT PIECE

41



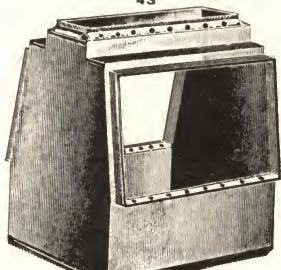
BOX FOR ONE REGISTER WITH EXTENSION COLLAR

42



BOX FOR TWO REGISTERS

43

DOUBLE BOX
WITH EXTENSION COLLAR

Cut 16—Foot Piece and 45° Angle.

Register Boxes and Fittings having capacity for 1 Register.

Size of Registers	Pipe No.	In and Outside Size of Pipe	Register Boxes		Foot Pieces Figs. 14, 15, 16		Angles Fig. 1	Elbows Fig. 7	Size of Extension Collar	Joints of Pipe to Extend Foot Pieces				
			Fig. 40	Fig. 41	Fig. 42	Fig. 43				H 2½ in.	G 4 in.	F 7½ in.	E 9 in.	D 11½ in.
7x10	14	5½x10 6½x10½	\$1 50	\$1 75	9&10	\$1 50	\$0 80	\$1 00	No. 7	\$0 40	\$0 45	\$0 60	\$0 80	\$0 90
7x12	15	5½x12 6½x12½	1 60	1 85	9&10	1 60	90	1 40	No. 7	60	65	80	85	1 00
10x12	15	5½x12 6½x12½	1 60	1 85	10	1 60	90	1 40	No. 8	60	65	80	85	1 00
8x13	16	5½x13 6½x13½	1 80	2 00	10	1 80	1 00	1 65	No. 8	70	80	1 00	1 20	1 35
10x13	16	5½x13 6½x13½	1 80	2 00	10	1 80	1 00	1 65	No. 8	70	80	1 00	1 20	1 35
10x14	17	5½x14 6½x14½	1 90	2 15	10&12	1 90	1 05	1 75	No. 8	75	85	1 05	1 25	1 40
12x14	17	5½x14 6½x14½	1 90	2 15	.....	1 90	1 05	1 75	No. 8	75	85	1 05	1 25	1 40
8x15	18	5½x15 6½x15½	2 40	2 50	10&12	2 25	1 25	2 00	No. 8	90	95	1 10	1 25	1 45
12x15	18	5½x15 6½x15½	2 40	2 50	10&12	2 25	1 25	2 00	No. 8	90	95	1 10	1 25	1 45

Discount

We do not recommend the use of Side Wall Boxes (Cuts 42 and 43) in the above sizes of pipe, as the capacity of pipe is not sufficient for two registers. We however furnish them if desired, but do not carry in stock.

We publish below list of sizes having ample capacity for two registers and would advise furnace men to install below sizes:

Register Boxes and Fittings having a capacity for 2 Registers.

Size of Registers	Pipe No.	In and Outside Size of Pipe	Register Boxes		Foot-Pieces Figs. 14, 15, 16		Angles Fig. 1	Elbows Fig. 7	Size of Extension Collar	Joints of Pipe to Extend Foot Pieces				
			Fig. 42	Fig. 43	Size of Collars	List				H 2½ in.	G 4 in.	F 7½ in.	E 9 in.	D 11½ in.
7x10	20	7½x10 8½x10½	\$2 00	\$2 25	9&10	\$2 00	\$1 00	\$1 40	No. 7	\$0 70	\$0 75	\$0 90	\$1 10	\$1 25
7x12	21	7½x12 8½x12½	2 50	2 75	9&10	2 50	1 20	2 25	No. 7	80	90	1 10	1 40	1 55
10x12	21	7½x12 8½x12½	2 50	2 75	9&10	2 50	1 20	2 25	No. 7	80	90	1 10	1 40	1 55
8x13	22	7½x13 8½x13½	2 65	2 90	10&12	2 65	1 30	2 40	No. 8	90	1 00	1 20	1 50	1 65
10x13	22	7½x13 8½x13½	2 65	2 90	10&12	2 65	1 30	2 40	No. 8	90	1 00	1 20	1 50	1 65
10x14	23	7½x14 8½x14½	2 75	3 00	10&12	2 75	1 40	2 50	No. 8	95	1 10	1 30	1 60	1 75
12x14	23	7½x14 8½x14½	2 75	3 00	10&12	2 75	1 40	2 50	No. 8	95	1 10	1 30	1 60	1 75
8x15	24	7½x15 8½x15½	2 85	3 15	12	2 85	1 50	2 60	No. 8	1 10	1 20	1 40	1 70	1 85
12x15	24	7½x15 8½x15½	2 85	3 15	12	2 85	1 50	2 60	No. 8	1 10	1 20	1 40	1 70	1 85

Discount

PRICE LIST OF DOUBLE WALL PIPE

No.	Size Inches	Area of Pipe	Price List per Foot 2 ¹ / ₈ in.	Price List of Lengths Shorter than 24 Inches						
				Fig. H	Fig. G 4 in.	Fig. F 7 ¹ / ₄ in.	Fig. E 9 in.	Fig. D 11 ¹ / ₂ in.	Fig. C 14 in.	Fig. B 19 in.
7	Inside 3 x 9 ¹ / ₄ , outside 3 ⁵ / ₈ x 9 ⁷ / ₈	28	\$0.50	\$0.25	\$0.30	\$0.40	\$0.50	\$0.55	\$0.65	\$0.80
8	Inside 3 x 12, outside 3 ⁵ / ₈ x 12 ⁵ / ₈	36	.60	.35	.40	.50	.60	.65	.75	.95
9	Inside 4 ¹ / ₄ x 9 ¹ / ₄ , outside 5 x 9 ⁷ / ₈	40	.65	.35	.40	.50	.60	.65	.75	.95
10	Inside 3 x 14, outside 3 ⁵ / ₈ x 14 ⁵ / ₈	42	.80	.55	.60	.75	.80	.90	1.00	1.30
11	Inside 4 ¹ / ₄ x 12, outside 5 x 12 ⁵ / ₈	51	.90	.60	.65	.80	.85	1.00	1.15	1.40
12	Inside 4 ¹ / ₄ x 14, outside 5 x 14 ⁵ / ₈	59 ¹ / ₂	1.15	.70	.80	1.00	1.20	1.35	1.50	1.85
13	Inside 7 x 12, outside 7 ⁵ / ₈ x 12 ⁵ / ₈	84	1.30	.80	.90	1.10	1.40	1.55	1.75	2.00

PRICE LIST OF DOUBLE FITTINGS

No.	FOOT PIECES			REGISTER BOXES			ANGLES 45-DEGREE		EL-BOWS		TEES		OFFSETS			Reducers and Damps-		Adj. JTS.
	Size Col- lar in.	Figs. 14 15 16	Fig. 17	Sizes	Figs. 8 11 13	Figs. 23 35	Fig. 1	Fig. 34	Figs. 2 3 7 18	Figs. 2 3 7 18	Figs. 5 12	Figs. 22 31 32 33 36	Figs. 4 6	Figs. 26 27 29 30	Figs. 25 28	Fig. 10		
7	{ 8	1.20	1.40	8x10 8x12 9x12	1.20	1.45	.45	.65	.90	.90	1.20	1.30	1.50	.90	.60			
8	{ 8 9 10	1.25	1.50	8x12 9x12 10x12	1.25	1.50	.50	.75	1.00	1.00	1.25	1.50	1.65	1.00	.70			
9	{ 8 9	1.25	1.50	8x10 8x12 9x12	1.25	1.50	.50	.75	1.00	1.00	1.25	1.50	1.65	1.00	.70			
10	{ 10 12	1.45	2.00	10x12 10x14	1.45	1.75	.63	.88	1.25	1.25	1.75	1.75	2.25	1.25	1.00			
11	{ 10 12	1.50	2.00	10x12 10x14	1.50	1.85	.70	1.00	1.40	1.40	2.00	2.00	2.50	1.35	1.00			
12	{ 10 12	1.75	2.25	10x12 10x14 12x15	1.75	2.25	.88	1.12	1.65	1.65	2.25	2.25	2.75	1.75	1.15			
13	{ 10 12	2.50	3.25	10x12 12x15	2.50	3.00	1.13	1.50	2.25	2.25	3.25	3.00	3.25	2.00	1.35			

Nos. 7 and 8 sizes carried in stock.

A FEW COMBINATIONS SHOWING HOW DOUBLE AND SINGLE WALL PIPE CAN BE PUT TOGETHER

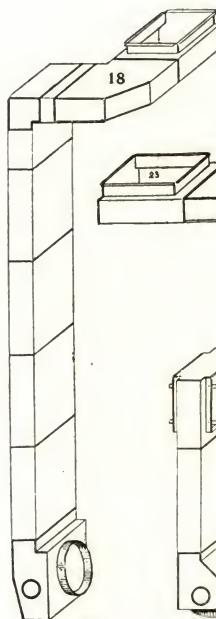


Fig. 61

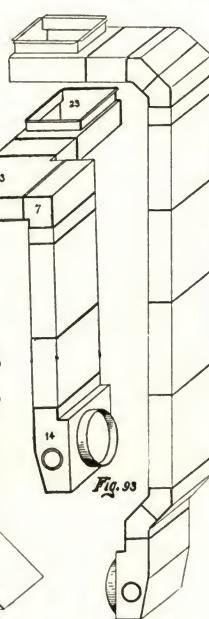


Fig. 62



Fig. 63



Fig. 64



Fig. 65

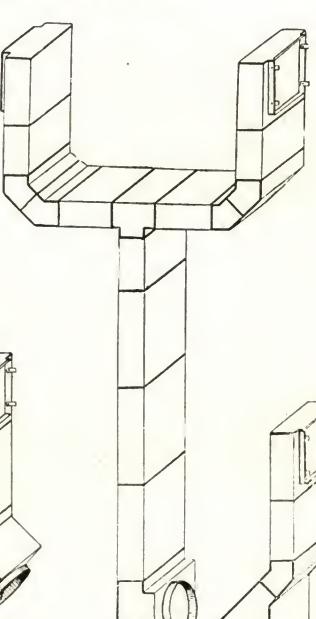


Fig. 66

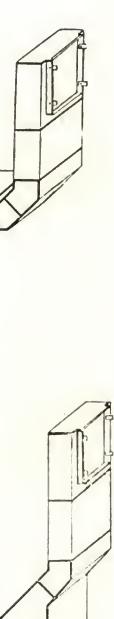


Fig. 67

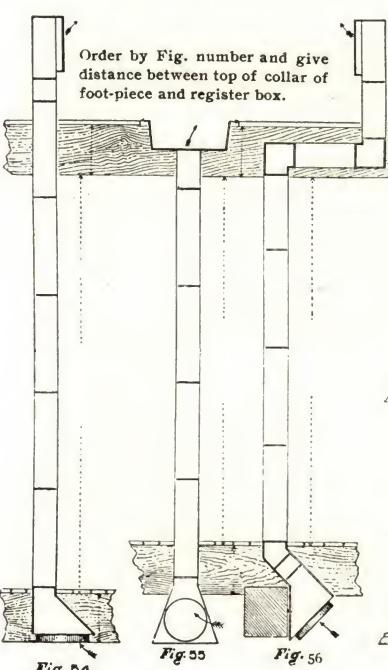


Fig. 68

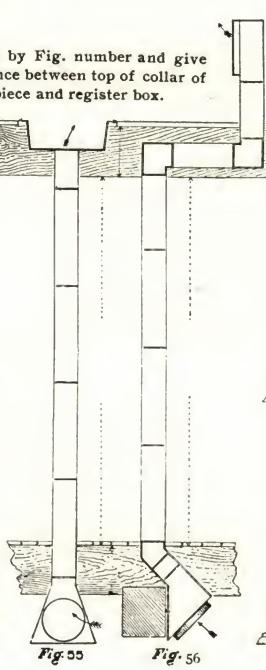


Fig. 69

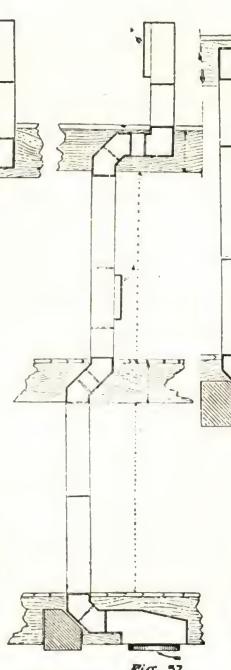


Fig. 70

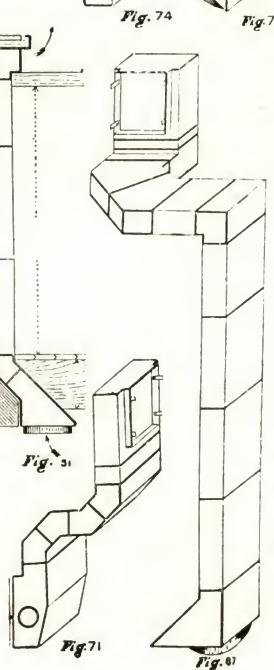


Fig. 71

Order by Fig. number and give distance between top of collar of foot-piece and register box.

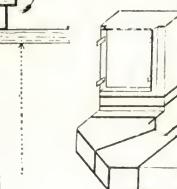


Fig. 72

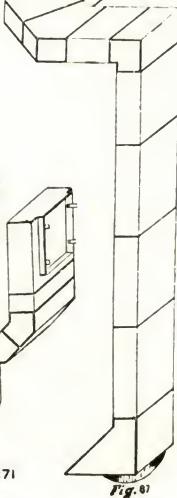
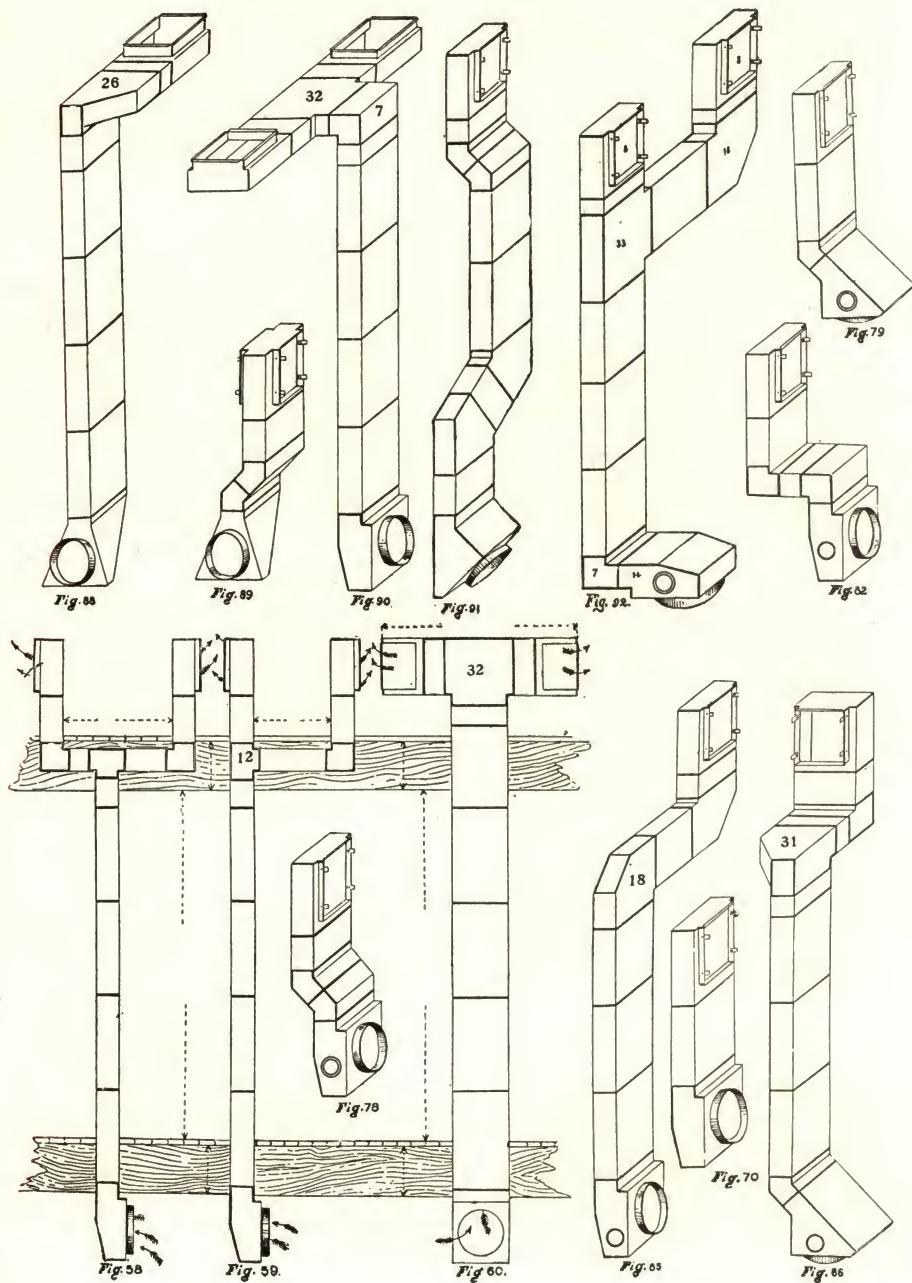


Fig. 73

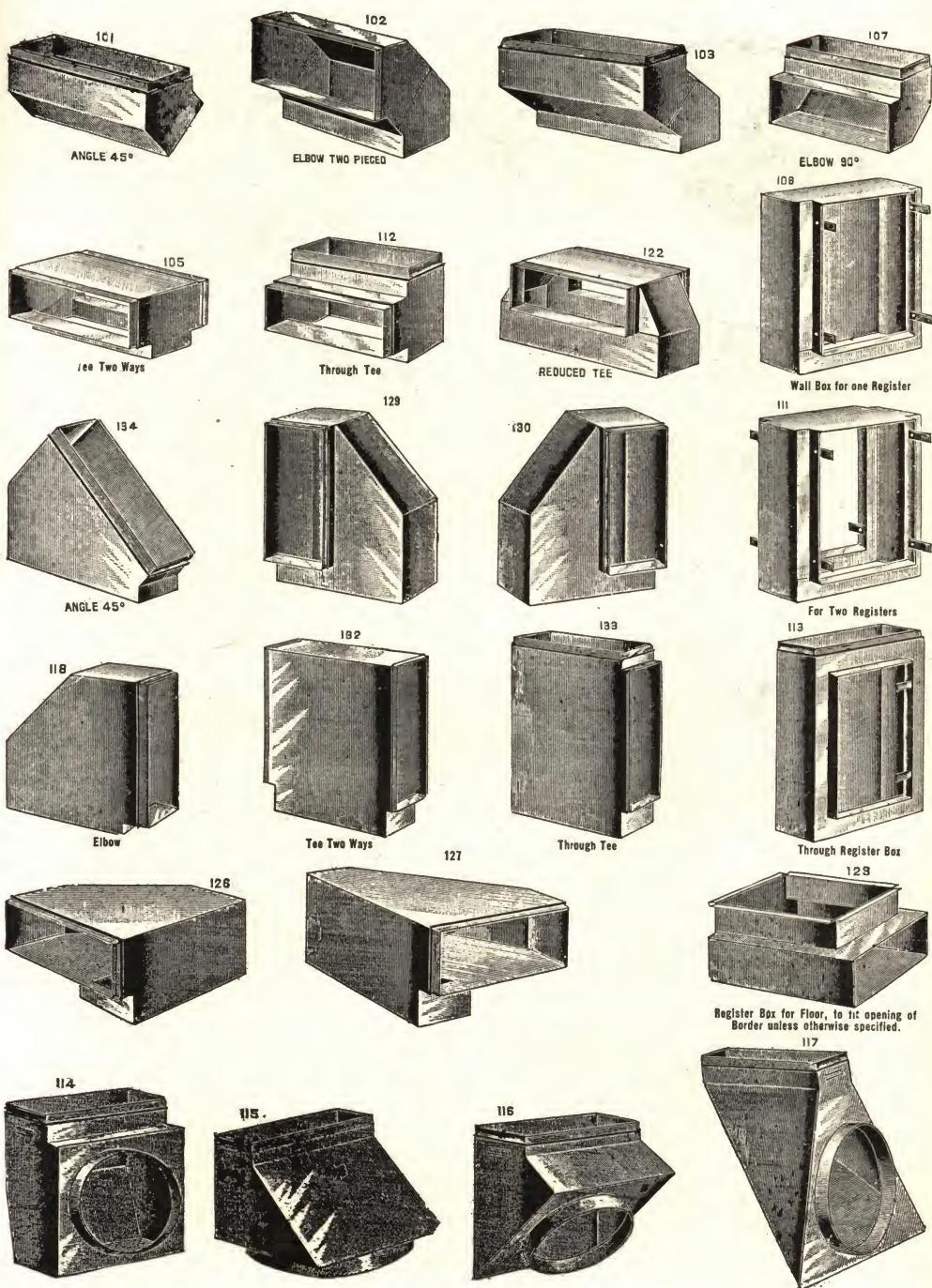
Fig. 74

Fig. 75

A FEW COMBINATIONS SHOWING HOW DOUBLE AND SINGLE WALL PIPE CAN BE PUT TOGETHER

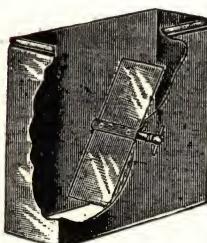


SINGLE WALL PIPE AND FITTINGS

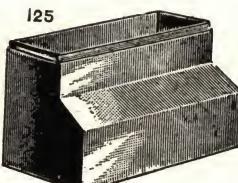


SINGLE WALL PIPE AND FITTINGS

128

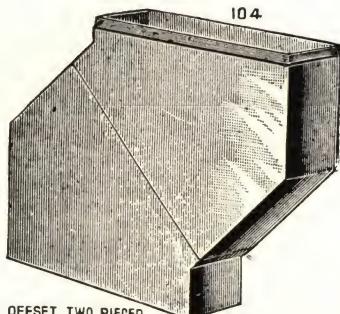


125

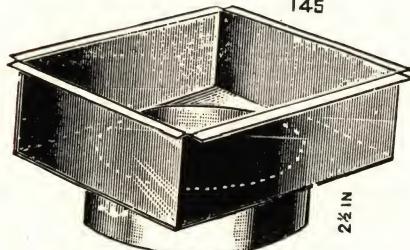


Reducer

104



145



2 1/2 IN

OFFSET TWO PIECED

116 1/2

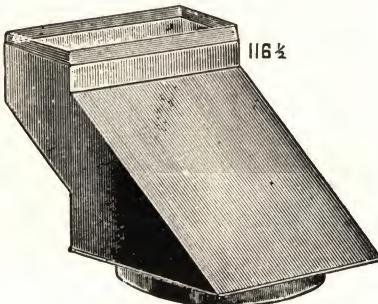


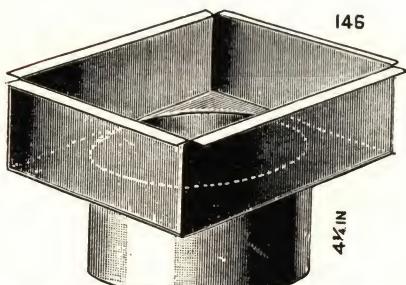
Fig. 145—Register Box for 8-in. Joists

Fig. 146— " " 10 " "

Fig. 147— " " 12 " "

IC & IX Tin

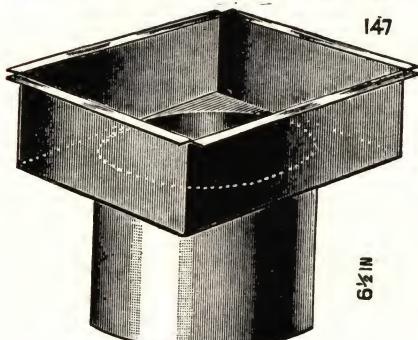
146



4 1/2 IN

Reg. box for 10-in joists. In Tin or Galv. Iron.

147



6 1/2 IN

Register Box for 12 inch Joists.

PRICE LIST

—OF—

Register Boxes.

Size of register	Size of Collar	Fig. 145. " 146. " 148.			Fig. 147.		Galv.
		I. C.	I. X.	I. C.	I. X.		
8x10	8 in.	.28	.35	.32	.40	.54	
8x12	8 "	.32	.40	.36	.45	.60	
9x12	9 "	.32	.40	.36	.45	.60	
10x12	10 "	.36	.45	.40	.50	.65	
10x14	10 "	.40	.50	.44	.55	.70	
12x14	12 "	—	—	.48	.60	.75	
12x15	12 "	—	—	.48	.60	.75	
14x16	14 "	—	—	—	.80	.90	
14x18	14 "	—	—	—	.90	1.00	
14x20	14 "	—	—	—	—	1.00	1.10
16x20	16 "	—	—	—	—	1.25	1.35
16x24	16 "	—	—	—	—	1.50	1.50
18x24	18 "	—	—	—	—	1.80	1.80
20x24	20 "	—	—	—	—	2.00	2.00
20x26	20 "	—	—	—	—	2.25	2.25
21x29	20 "	—	—	—	—	2.75	2.75
24x24	24 "	—	—	—	—	3.25	3.25
24x30	24 "	—	—	—	—	3.75	3.75
27x27	26 "	—	—	—	—	4.25	4.25
30x30	28 "	—	—	—	—	5.00	5.00

FURNACE PIPE

PRICE LIST OF SINGLE WALL PIPE AND FITTINGS

No.	PIPE		FOOT PIECES		REGISTER BOXES		ELBOWS AND ANGLES		TEES		OFFSETS		REDUCERS DAMPERS	Sizes of Register Boxes and Col- lars of Foot Pieces for each size of pipe.	
	Size of Pipe	Price per Foot	Figs. 114 115 116	Figs. 116 ¹ 117	Figs. 108 113	Figs. 111 123 135	Figs. 107 101	Figs. 118 134	Figs. 105 112	Figs. 122 132 133	Figs. 126 127 129 130	Figs. 125 128	Size of Register Boxes	Size of Col- lars in Foot Pieces Inches	
106	3x 9	\$0.13	\$0.35	\$0.60	\$0.45	\$0.60	\$0.20	\$0.25	\$0.35	\$0.60	\$0.60	\$0.40	8x10	8	
107	3½x10	.14	.40	.65	.50	.65	.30	.35	.40	.65	.65	.45	8x10 8x12 9x12	8-9	
108	3½x12	.16	.50	.70	.55	.70	.35	.40	.45	.75	.75	.50	8x12 9x12 10x12	8-9-10	
109	3½x14	.18	.60	1.00	.70	.85	.45	.45	.50	.80	.80	.65	10x12 10x12	10-12	
110	*4x12	.18	.60	.85	.70	.90	.45	.50	.50	.75	.75	.65	10x12 10x14	9-10	
111	*5½x12	.24	.75	1.10	.90	1.00	.50	.65	.75	.85	.85	.75	10x14 10x12	9-10	
112	*5½x14	.26	.85	1.25	1.00	1.10	.65	.75	.75	.90	1.00	.85	10x14 12x15	10-12	
113	*7½x12	.28	1.10	1.25	1.10	1.25	.65	1.00	1.10	1.25	1.25	1.00	10x14 12x15	10-12	
114	*7½x14	.40	1.40	1.75	1.25	1.50	1.00	1.35	1.35	1.50	1.50	1.75	12x15	12-14	

*Made to order only.

Register box for floor, to fit opening of border unless otherwise specified.

We can furnish any desired lengths of Single Wall Pipe, but always have in stock 3 joint sections which are 59 inches long. This length will be shipped unless otherwise ordered.

Collars in foot pieces of sizes other than indicated will be charged extra 15 cents net each, and partitions in double register boxes, Figs. 11, 111, will be put in upon request only, and at an extra charge of 10 cents each.

For wrapping with one thickness of asbestos paper, add 33 1-3 for stacks, and 50 per cent for fittings.

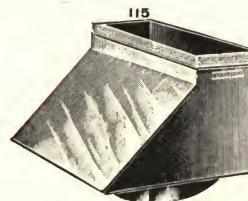
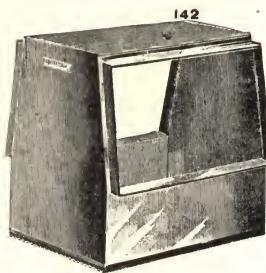
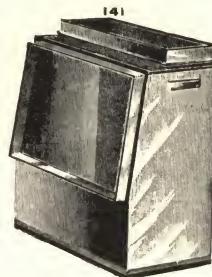
All our single pipes nest, and by ordering two or three different sizes a saving in freight can be effected.

We do not recommend the use of single wall stacks for wood-studded partitions, but in some localities their use has become custom.

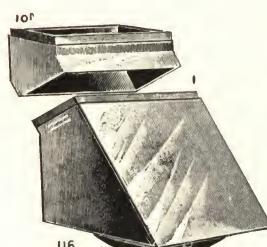
We offer the trade the finest and most perfect single wall stacks that machinery can produce, and at a price far less than you can produce them.

Single Baseboard Register Boxes and Fittings

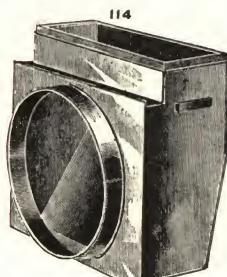
For cuts 100, 101, Hart & Cooley's, Tuttle & Bailey's, Ferrosteel and other leading makes of Registers.



FOOT PIECE



FOOT PIECE WITH ANGLE



FOOT PIECE

INSTRUCTIONS

For placing Baseboard Boxes (Figs. 40, 41, 42, 43, 140, 141, 142 and 143) for use with cut 101 Baseboard Registers.

Place top of cast register frame over edge of upper front of register box, and then turn the two straps on register box over lower part of cast frame collar.

No soldering required.

State whether cut 100 or 101 register is preferred. Each is perfect in design and workmanship. Simply a matter of choice.



Single Register Boxes and Fittings, having capacity for 1 register.

Size of Registers	No.	Size of Pipe	Register Boxes Figs. 140, 141, 142, 143. List Price		Foot Pieces Figs. 114, 115, 116		Angles Fig. 101 Elbows Fig. 107	Size of Extension Collars	Pipe to Extend F. Pieces 4 in 6 in
			140	141	142	143			
7x10	114	6 1/2 x10	\$0 70	\$0 80	9&10	\$0 50	\$0 20	3 1/2 x10	30 40
7x12	115	6 1/2 x12	80	90	9&10	75	25	3 1/2 x10	35 45
10x12	116	.....	80	90	.....	.....	.....	3 1/2 x12	40 50
8x13	116	6 1/2 x13	90	1 00	10	80	30	3 1/2 x12	40 50
10x13	116	.....	90	1 00	.....	.....	.....	.....	.....
10x14	117	6 1/2 x14	1 00	1 10	10&12	90	50	3 1/2 x12	45 55
12x12	117	.....	1 00	1 10	.....	.....	.....	.....	.....
8x15	118	6 1/2 x15	1 10	1 15	10&12	1 00	60	3 1/2 x12	50 60
12x15	118	.....	1 10	1 15	.....	.....	.....	.....	.....
8x17	119	6 1/2 x17	1 10	1 20	12	1 10	80	3 1/2 x12	55 65

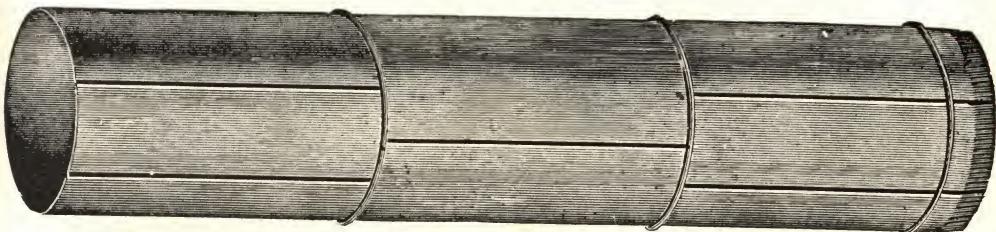
We do not recommend the use of Side Wall Boxes (Cuts 142 and 143) in the above sizes of pipe, as the capacity of pipe is not sufficient for two registers. We however furnish them if desired, but do not carry in stock.

We publish below list of sizes having ample capacity for two registers, and would advise the use of the larger sizes:

Register Boxes and Fittings, having capacity for 2 registers

Size of Registers	No.	Size of Pipe	Register Boxes Figs. 142, 143 List Price		Foot Pieces Figs. 114, 115, 116		Angles Fig. 101 Elbows Fig. 107	Size of Extension Collars	Pipe to Extend F. Pieces 4 in 6 in
			142	143	Size of Collars	List			
7x10	120	9 1/4 x10	\$0 90	\$1 00	9&10	\$1 20	\$0 40	3 1/2 x10	40 50
7x12	121	9 1/4 x12	1 00	1 20	10&12	1 40	50	3 1/2 x10	45 55
10x12	121	.....	1 00	1 20	12	1 50	60	3 1/2 x12	50 60
8x13	122	9 1/4 x13	1 10	1 30	12	1 50	70	3 1/2 x12	55 65
10x13	122	.....	1 10	1 30	.....	.....	.....	.....	.....
10x14	123	9 1/4 x14	1 20	1 40	12	1 60	80	3 1/2 x12	55 65
12x14	123	.....	1 20	1 40	.....	.....	.....	.....	.....
8x15	124	9 1/4 x15	1 30	1 50	12	1 70	80	3 1/2 x12	60 70
12x15	124	.....	1 30	1 50	12	1 80	80	3 1/2 x12	65 75
8x17	125	9 1/4 x17	1 50	1 70	12	1 80	80	3 1/2 x12	65 75

FURNACE PIPE



8 to 12 inches in diameter, made in both IC and IX weights. 14 inch pipe and larger made in IX weight only. 6 and 7 inch pipe made in IC weight only. 6 to 20 inch diameter pipe inclusive always in stock.

Price List of Round Pipe, Elbows, Adjustable Elbows, Etc.

We recommend the use of four (4) pieced Elbows for all furnace work. They look better when connected to the pipes, and offer the least resistance to the flow of air, consequently give better results.

SIZE	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.	14 in.	16 in.	18 in.	20 in.	22 in.	24 in.	26 in.	28 in.	30 in.
Hot Air Pipe, IC Tin, per foot.....	.11	.12	.13	.14	.15	.18									
Hot Air Pipe, IX Tin, per foot.....	.15	.16	.17	.18	.22	.30	.35	.45	.60	.75	.90				
Elbows, 4-pieced, IC Tin .....	.18	.20	.22	.25	.35										
Elbows, 4-pieced, IX Tin .....	.23	.25	.28	.32	.44	.70	.95	1.25	1.55						
Elbows, 3-pieced, IC Tin .....		.18	.20	.22	.30										
Angles, 21½° and 42°, IC Tin.....	.10	.11	.12	.13	.20										
Angles, 21½° and 42°, IX Tin.....	.13	.14	.15	.17	.24	.40	.55	.75	.90						
Adjustable Elbows, 4-pieced, IC Tin .....	.18	.20	.22	.24	.27	.40									
Adjustable Elbows, 4-pieced, IX Tin .....	.25	.28	.31	.35	.48	.75	1.05	1.25	1.55						
Adjustable Elbows, 3-pieced, 60° to 0, IC Tin .....			.20	.22	.25	.36									
Adjustable Elbows, 3-pieced, 60° to IX Tin .....				.24	.27	.31	.44								
Casing Collars, Style A.....	.08	.08	.09	.10	.12	.15	.20	.25	.30						
Casing Collars, Style B.....	.20	.20	.23	.25	.30	.37	.50	.63	.90						
Casing Collars, Style C and E for cold air.....	.16	.16	.16	.18	.20	.25	.30	.40	.50	.60					
Casing Collars, Style D.....	.25	.25	.35	.40	.45	.50	.60								
Plaster Collars.....	.14	.14	.16	.18	.20	.25									
Finishing Collars.....		.28	.32	.36	.40	.50									
Smoke Pipe, Black Iron, No. 24 gauge, per foot.....		.16	.18	.20	.22										
Elbows, Black Iron, 4-pieced gauge .....		.25	.30	.35	.50										
Adjustable Elbows, Black Iron, 4-pieced.....		.30	.35	.40	.60										
Angles, Black Iron, 22½° and 45°.....		.15	.20	.24	.30										
Galvanized Iron Angles, 22½° and 45°.....		.18	.22	.26	.35	.40	.50	.60	.70	.90					
Galvanized Iron Pipe, for smoke or cold air, 26 gauge.....		.16	.18	.20	.24	.32	.35	.40	.45	.50	.60	.70	.80	.90	1.00
Galvanized Iron Pipe, for smoke or cold air, 24 gauge.....		.20	.22	.24	.26										
Galvanized Iron Elbows, 4-pieced, 26 gauge.....		.22	.26	.30	.35	.45	.60	.80	1.00	1.20	1.60	2.00	2.40	2.80	3.20
Galvanized Iron Adjustable Elbows, 4-pieced, 26 gauge .....		.25	.30	.35	.40	.50	.70	.90	1.20	1.50	1.80	2.20	2.60	3.00	3.50
Galvanized Iron Adjustable Elbows, 4-pieced, 24 gauge .....		.40	.45	.55	.65										
Galvanized Iron Adjustable Elbows, 4-inch, slip.....		.45	.50	.65	.75										

Y Branches, Gal. Iron or Tin, 10 to 8, \$1.30; 12 to 9, \$1.70; 14 to 10, \$2.50; 16 to 12, \$3.00; 18 to 14, \$4.00; 20 to 14, \$5.00.

Iron heavier than 26 gauge, add 10 per cent for each number.

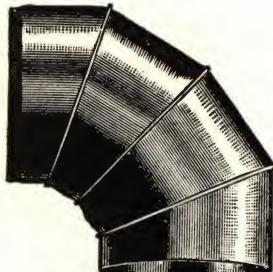
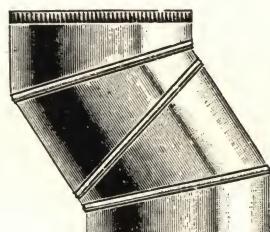
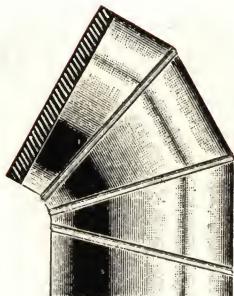
All Tin Pipe and Fittings 12 in. in diameter and smaller are made of both IC and IX tin. All goods 14 in. in diameter and larger made of IX tin only.

We make any desired size of Pipe and Fittings.

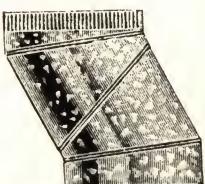
Our Heater Pipe Elbows are 84 degrees instead of 90, and are just right for Furnace Work.

Our goods are not hammered together by boys, but are made by machinery and out of best bright tin, and therefore perfect.

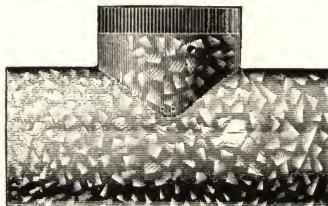
SINGLE ROUND PIPE AND FITTINGS



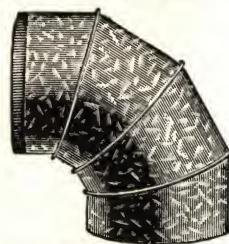
Adjustable Elbows 17 to 20 in.
Cold Air Pipe Elbows, see pages 17 & 18.



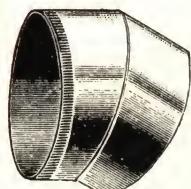
Adjustable Elbow for Smoke
Pipe. Black or Galv.



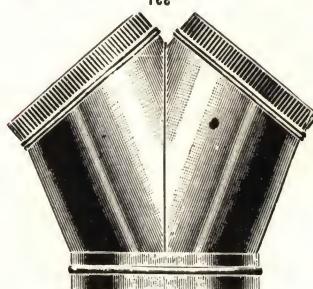
Tee



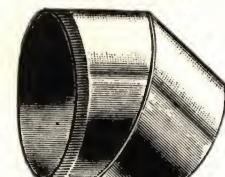
Smoke Pipe Elbows
Black or Galvanized Iron



21 1/2-Degree Angle. IC & IX.



Y Branches in Tin or Galvanized Iron.



42-Degree Angle. IC & IX.



Casing Collar, Style A,
For Top of Bonnet.



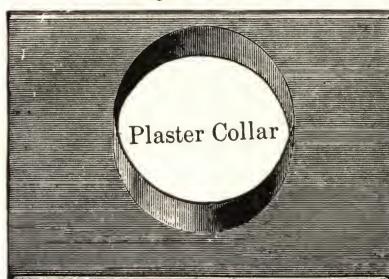
60-degree Adjustable Angle



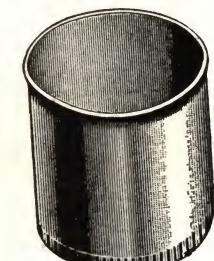
Casing Collar, Style C, for
Side of Straight Bonnet.



Style B, For Side of Bonnet,
Having 75 or 60-degree pitch.

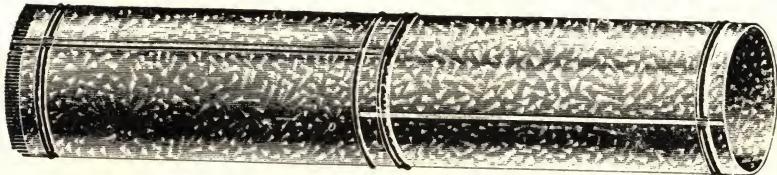


Plaster Collar

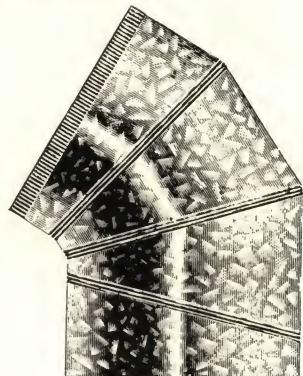
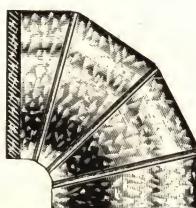
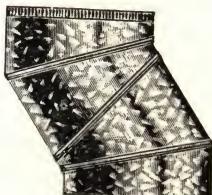


Style D Casing Collar, for Brick
Set Furnace. 8 in. long.

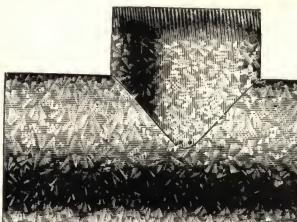
Cold Air Pipe and Fittings.



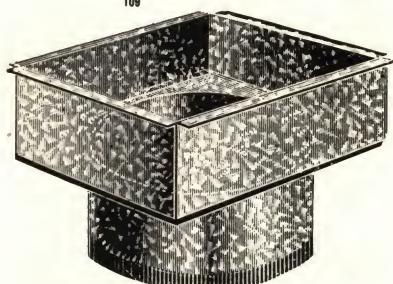
Galvanized Cold Air Pipe 12 to 30 inches in diameter.



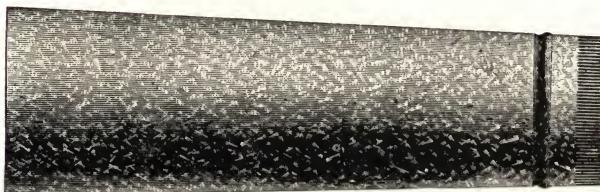
FURNACE T



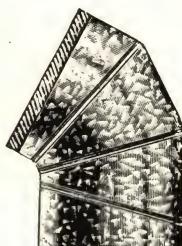
PRICE LIST—Either Black or Galv. Iron			
6 inch	\$1 00	14 inch	2 00
7 inch	\$1 00	16 inch	2 25
8 inch	\$1 00	18 inch	2 50
9 inch	\$1 25	20 inch	2 75
10 inch	\$1 50	22 inch	3 00
12 inch	\$1 75	24 inch	3 25



109
Register Box for Cold Air.
See list, page 16.

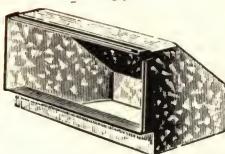


Taper Joint 24 in. long.
Price 10% advance over price of large end pipe.
Furnished in either Black or Galv. Iron. In
ordering state which end is to be crimped.



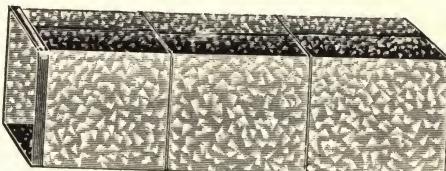
COLD AIR PIPE AND FITTINGS

107



Elbow

118



Elbow

E

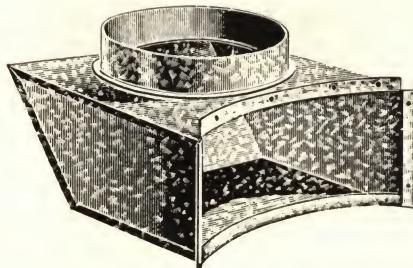
Price List of Galvanized Cold Air Pipes, Elbows, Collars
for Wall, etc.

Diameter of Furn. Casing in.	Size of Shoes in.	Size of Collar in.	Galv. Iron Pipe	Elbows Fig. 107 Fig. 118	Cold Air Shoes			Casg. Top Fig. 139	Cold Air Collar for Brick Wall Fig. 144	
					Fig. 136	Fig. 137	Fig. 138		Size	Fig. 144
28	12x20	14	.60	1.35	2.40	2.60	4.00	4.00	12x16	.75
32	12x24	16	.65	1.50	2.70	3.00	4.25	4.25	12x18	.85
36	14x24	18	.75	1.75	3.00	3.25	4.50	4.50	12x20	1.00
40	14x28	18&20	.80	1.80	3.35	3.75	5.00	5.00	12x24	1.25
42	16x24	18&20	.85	2.00	3.50	4.00	5.50	5.50	.....	.....
46	16x28	20&22	.90	2.25	3.60	4.25	6.00	6.00	.....	.....
48	18x30	24	1.00	2.50	4.10	4.50	6.50	6.50	.....	.....
56	20x30	26&28	1.40	3.00	4.35	4.75	7.50	7.50	.....	.....

Discount.....

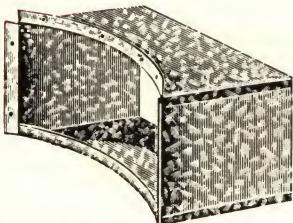
When ordering Cold Air Shoes state diameter of furnace casing and height of lower section of casing, and give Fig. number of shoe and diameter of collar of shoe.

137



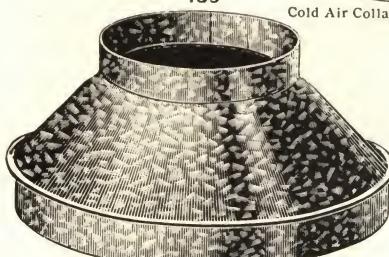
Cold Air Shoe for Galvanized Iron Pipe.

136



Cold Air Shoe to Connect to Wooden Box

139

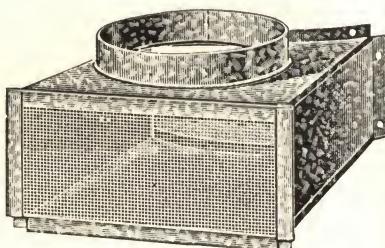


Furnace Casing Top for One Register

138



Finishing Collar.



Cold Air Shoe with Wire Screen.



PECORA FURNACE CEMENT

Comes in paste form ready for use and is very strong and durable. Sets in a few hours and will not crack when exposed to heat.

5 and 10 pound cans, per pound.....	\$.....
25 and 50 pound cans, per pound.....	\$.....
100 and 300 pound tubs, per pound.....	\$.....

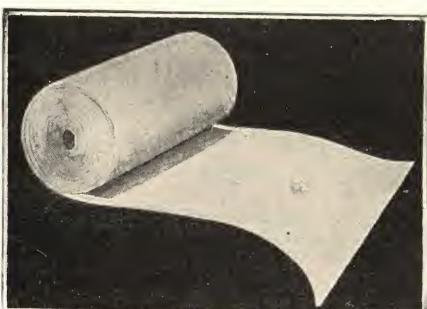
400 pound tubs, per pound.....



GOLDEN STAR FURNACE CEMENT

The Golden Star furnace cement is made in paste form and comes in packages, same as "Pecora," used extensively for repair work.

5 and 10 pound cans, per pound.....	\$.....
25 and 50 pound cans, per pound.....	\$.....
100 and 300 pound tubs, per pound.....	\$.....



ASBESTOS PAPER

Made of the best quality of asbestos fibre, possesses the highest fire-proof and non-conducting qualities, and is invaluable as a fire protector.

We carry in stock 8, 10, 12 and 14 pound Asbestos Paper in 50 and 100 pound rolls.

Per pound	50 lb. lot. \$.....	100 lb. lot. \$.....	500 lb. lot. \$.....
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ANCHOR FLOUR PASTE

Anchor paste flour is the original cold water paste, used extensively by furnace men, for the purpose of pasting asbestos paper to furnace pipe. It comes in dry form, put up in 10 pound cans, and is ready for making paste quickly by adding water.

OTHER STRONG POINTS

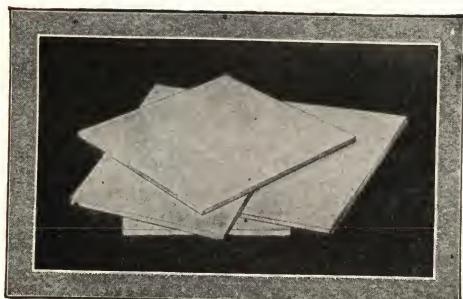
1. Saves you freight on the water.
2. Works smoothly and consumes far less time in mixing than ordinary flour paste.
3. Rats and mice will not cut the material on which it is used.
4. It requires no experience in mixing.



Price List

6-10 pound cans.....	\$4.50 per case	1-10 pound cans.....	85c each
4-10 pound cans.....	3.00 per case	Barrel lots (about 200 lbs.)	6c per lb.

ASBESTOS SHEET MILL BOARD



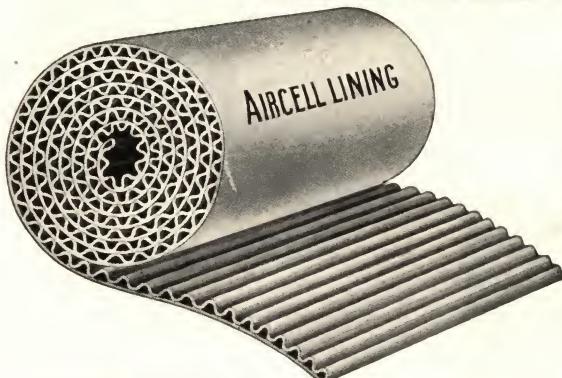
Our Asbestos Mill Board is in general use for protecting walls, ceilings and joists from overheated surfaces. It is absolutely fire and acid proof, and is also extensively used for packing joints of all kinds about steam plants.

It is furnished in sheets 40 x 40 inches, from $\frac{1}{2}$ to $\frac{1}{2}$ inch thick.

Approximate Weight per Sheet

$\frac{1}{2}$ in...2 lbs.	$\frac{3}{2}$ in...6 lbs.	$\frac{1}{4}$ in...14 lbs.
$\frac{3}{4}$ in...3 lbs.	$\frac{1}{8}$ in...8 lbs.	$\frac{3}{8}$ in...23 lbs.
$\frac{1}{8}$ in...4 lbs.	$\frac{3}{8}$ in...12 lbs.	$\frac{1}{2}$ in...27 lbs.
Price, per lb., in case lots of 250 lbs.\$.....		
Price, per lb., in less quantities.....		

ASBESTOS AIR-CELL PAPER



Manufactured of strictly fire-proof asbestos felts with $\frac{1}{4}$ in. corrugations. Put up in rolls 3 feet wide, containing 210 and 250 square feet. It has an extensive use for the wrapping of furnace pipes, on which it forms the cheapest and most effective non-conducting heater pipe covering on the market. It also can be used on steam and hot-water pipes.

In rolls, 3 cents per square foot. Less quantities, $3\frac{1}{2}$ cents per square foot.

ASBESTOS WICK PACKING



Our Asbestos Wick Packing is made of the purest asbestos fibre, absolutely acid and fire proof, and is used for packing small steam pumps, tubes, valve stems and similar purposes.

It is put up in $\frac{1}{4}$, $\frac{1}{2}$ and 1-pound balls.
Price, per pound.....\$.....

SINGLE IRON JACK CHAIN



No. 16 Price per box of 12 yards.....\$.....

DOUBLE IRON JACK CHAIN

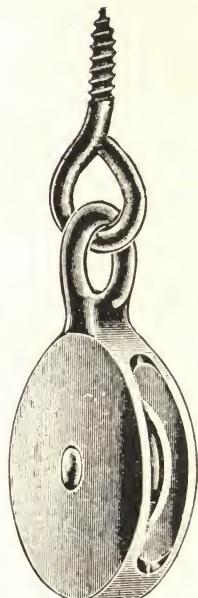


No. 16 Price per box of 12 yards.....\$.....

BRASS SAFETY CHAIN



No. 0 Price per box of 12 yards.....\$.....



Awning Pulley

AWNING PULLEYS

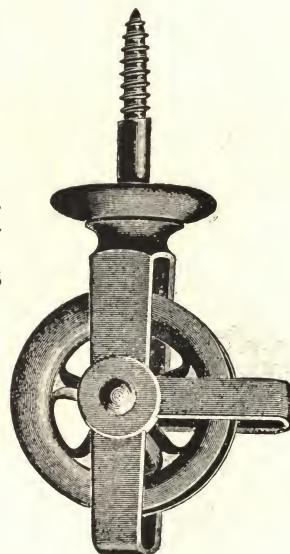
Japanned

No. 10 1½ in. wheel, doz...\$....
11 2 in. wheel, doz...\$....

ENCASED SCREW PULLEYS

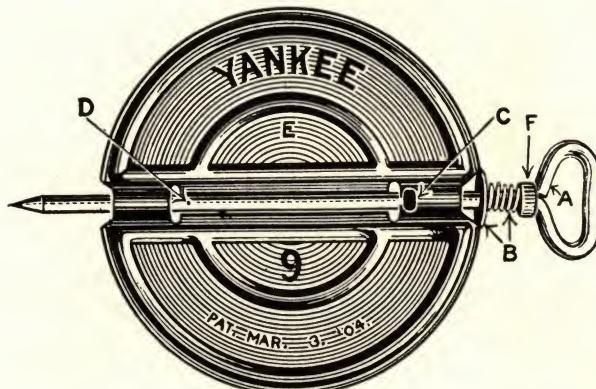
Japanned

No. 12 2 in. wheel, doz....\$....



Encased Screw Pulley

YANKEE HOT AIR DAMPER FOR FURNACE PIPE



You cannot afford to make dampers when you can buy the Yankee.

Sizes, inches	6	7	8	8½	9	9½	10
List, per dozen.....	\$1.15	1.60	2.20	2.45	2.60	2.80	2.80
Sizes, inches	10½	11	12	12½	14	15	
List, per dozen.....	\$3.05	3.30	3.50	3.75	5.00	6.00	

The Easiest Damper to Get In or Out

"A"—Tinned steel handle, which is part of rod.

"B"—Steel spring and washer.

"C"—Pins with elongated heads hold damper firmly in place, also keep washer from getting off rod.

"D"—Shows other end of pin going through rod and riveted solidly. The pointed steel rod can be driven through pipe easily.

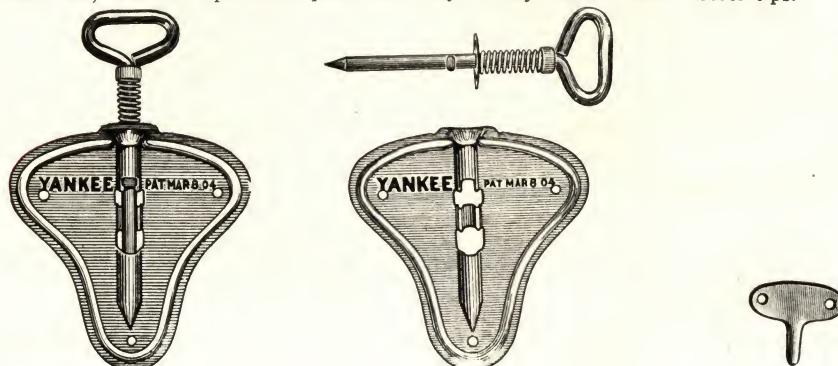
"F"—Shows ferrule.

Discount.....per cent.

Packed loose.

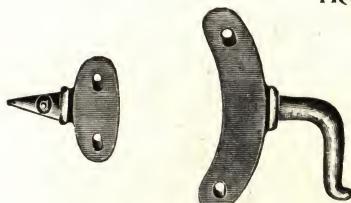
YANKEE DAMPER CLIP ALL STEEL

Plate is made of 22 degrees steel. Rod and handle (in one piece) of $\frac{1}{4}$ inch steel rod, tinned. Operation quick and easy. They never break. Steel tips.



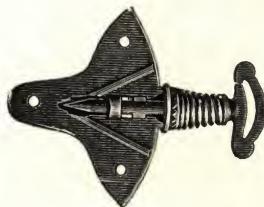
List, per dozen.....	\$1.10	List, per dozen..	\$0.22
<i>Discount.....per cent.</i>			

DAMPER CLIPS
TROY DAMPER CLIPS

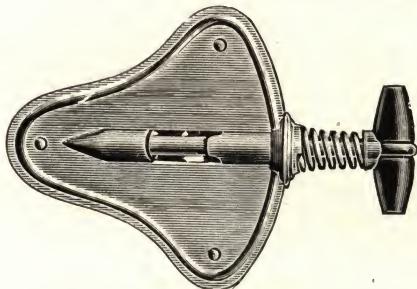


Malleable Iron.

Per gross	\$.....
One gross in a box.	

IDEAL DAMPER CLIPS

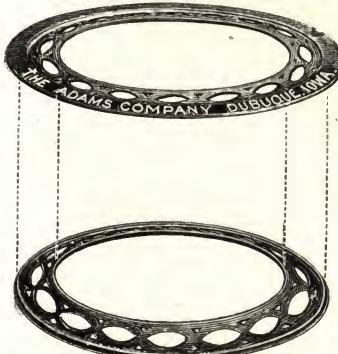
No. 3 Iron handle, japanned, with tail piece,	
per gross	\$.....
No. 4 Iron handle, japanned, without tail	
piece, per gross.....	\$.....
One dozen in a box, one gross in a case.	

IDEAL STEEL DAMPER CLIPS

Made of heavy sheet steel. The clip that will not break when being applied. Is also strengthened by a corrugation around the outer edge.

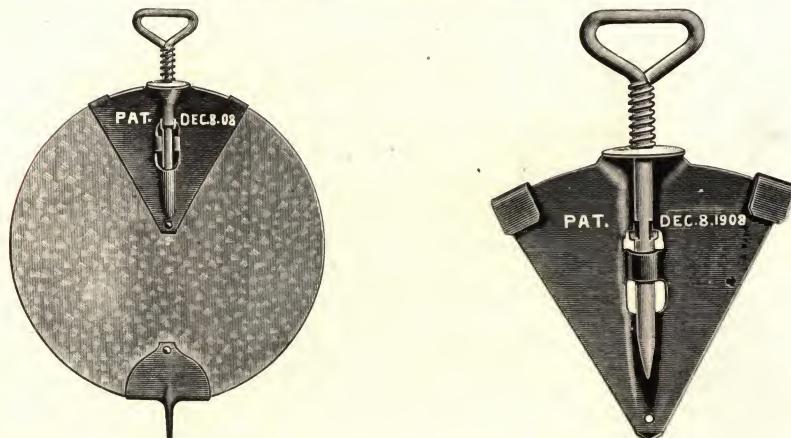
Iron handle, nickel plated spindle spring and button, with tail piece, per dozen.....\$1.75
Iron handle, nickel plated spindle spring and button, without tail piece, per dozen 1.60

Discount.....:.....per cent.

CAST CYLINDER HEADS

Inches	5	6	7
Per doz.....	\$.....	\$.....	\$.....

THE "STERLING" NO-RIVET DAMPER CLIP



Saves time and rivets. Can be put on damper as quick as you can mark the holes for the old style clip.

It is not necessary to use tail pieces with this clip on Dampers under 12 inches in diameter, as the large shoulder washer and stiff spring holds it perfectly rigid.

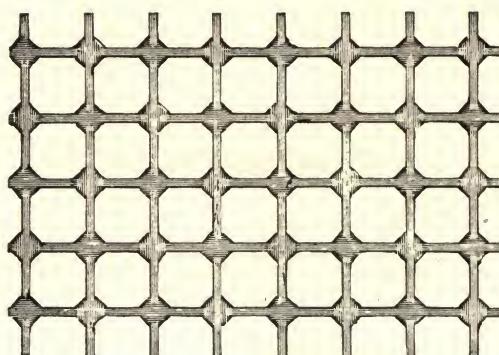
Tail pieces applied same as clip. Sold with or without tail pieces.

DIRECTIONS—Place clip on damper; if tin or light sheet iron, the point can be driven through by placing it on a pine board, or block if heavy iron; start hole with corner of chisel, drive point through, clinch and hammer down lugs. For dampers over 10 inches in diameter snip off edge of damper so that shoulder of clip comes flush with plate.

Clips only, per gross.....	\$6.50
Tails only, per gross.....	.60

Discount.....per cent.

WIRE CLOTH FOR COLD AIR PIPE

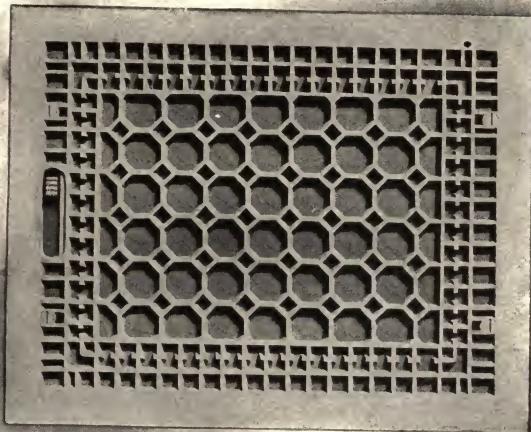


Galvanized Hardware Grade, Standard Gauge

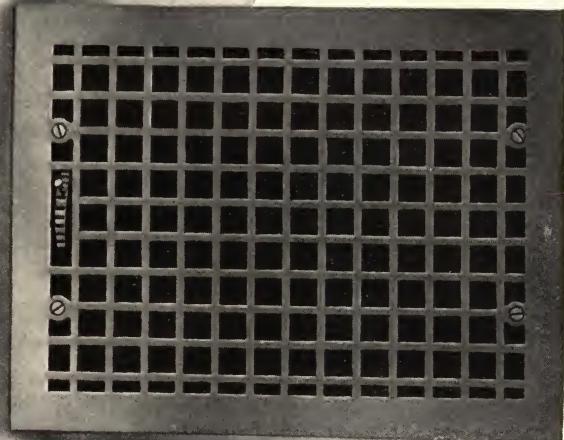
Meshes per inch.....	2	3	4	5	6	7	8
Gauge of wire before galvanizing.....	19	21	23	24	25	26	27
Rolls of 50 feet.....	\$....	\$....	\$....	\$....	\$....	\$....	\$....
Rolls of 100 feet.....	\$....	\$....	\$....	\$....	\$....	\$....	\$....

Above meshes carried in stock 24, 30 and 36 inches wide in 50 and 100-foot rolls. Prices on application.

**CAST IRON
MOORISH DESIGN**



**Moorish Registers and Faces
PLAIN LATTICE DESIGN**



Plain Lattice Registers and Faces

We can furnish either all cast Registers or semi-steel Registers which have cast faces and wrought steel backs. Always specify style and design wanted.

REGISTERS, FACES, BORDERS

JAPANNED—BLACK

Size	Register, Vertical Wheel	Register Face	Floor Border	Capacity of Frosted Registers. Sq. Inches	Size	Register, Vertical Wheel	Register Face	Floor Border	Capacity of Frosted Registers. Sq. Inches
4 x 6	\$ 1.40	\$ 0.55	\$ 1.15	18	8 x 10	\$ 1.65	\$ 1.10	\$ 1.25	59
4 x 8	1.50	.60	1.15	23	8 x 12	1.90	1.30	1.50	70
4 x 10	1.55	.75	1.15	30	8 x 13	2.75	1.85	1.85	77
4 x 12	1.80	.95	1.35	35	8 x 14	3.00	2.00	2.00	82
4 x 13	2.50	1.10	1.75	39	8 x 15	3.80	2.60	2.60	88
4 x 15	3.00	1.20	1.90	45	8 x 16	4.50	2.70	2.70	94
4 x 18	4.00	1.30	2.75	53	8 x 18	6.60	3.50	3.50	105
4 x 21	5.00	2.25	3.15	62	8 x 20	8.70	3.90	3.90	120
4 x 24	6.00	2.75	3.75	70	8 x 21	9.00	4.00*	4.00	123
					8 x 24	11.25	4.70	4.70	140
					8 x 27	13.60	5.40	5.40	158
					8 x 30	14.70	6.30	6.30	176
5 x 8	1.55	.90	1.15	30					
5 x 9	1.55	1.00	1.20	33					
5 x 10	1.60	1.05	1.20	36					
5 x 11	1.75	1.10	1.30	41	9 x 9	2.00	1.40	1.60	54
5 x 12	1.80	1.20	1.40	45	9 x 12	2.10	1.45	1.65	79
5 x 13	2.60	1.35	1.80	47	9 x 13	2.95	2.00	2.00	82
5 x 14	2.80	1.50	1.90	51	9 x 14	3.10	2.15	2.15	86
5 x 15	3.60	1.65	2.00	57	9 x 15	3.95	2.65	2.65	99
5 x 16	3.90	1.80	2.60	58	9 x 16	4.70	2.70	2.70	105
5 x 17	4.20	2.00	2.70	63	9 x 17	5.95	3.25	3.25	112
5 x 18	5.25	2.10	3.20	66	9 x 18	6.65	3.60	3.60	118
					9 x 19	7.40	3.95	3.95	125
					9 x 20	8.75	4.30	4.30	132
6 x 6	1.50	.90	1.15	27	9 x 22	10.35	4.50	4.50	140
6 x 8	1.55	1.00	1.15	35	9 x 24	12.00	5.30	5.30	158
6 x 9	1.60	1.05	1.20	40	9 x 25	14.25	6.00	6.00	165
6 x 10	1.60	1.05	1.20	45	9 x 26	15.25	6.35	6.25	170
6 x 12	1.85	1.25	1.45	53	9 x 28	16.35	6.80	6.50	185
6 x 14	2.85	1.65	1.90	62	9 x 30	17.50	7.10	7.10	198
6 x 16	4.00	2.00	2.70	70					
6 x 18	5.20	2.25	3.25	79					
6 x 20	6.00	2.50	3.50	88					
6 x 22	7.00	3.00	3.95	97					
6 x 24	8.00	3.70	4.50	106					
6 x 28	9.50	4.25	5.40	123					
6 x 30	11.50	4.75	6.00	132					
6 x 32	13.00	5.25	6.50	141					
					10 x 10	2.35	1.65	1.70	72
					10 x 12	2.40	1.70	1.75	88
7 x 7	1.55	1.00	1.20	36	10 x 14	3.15	2.20	2.20	103
7 x 10	1.65	1.10	1.25	52	10 x 16	4.85	2.95	2.95	117
7 x 12	1.90	1.25	1.50	62	10 x 18	6.70	3.70	3.70	130
7 x 14	2.95	1.90	1.90	72	10 x 20	8.90	4.35	4.35	147
7 x 15	3.75	2.55	2.55	77	10 x 22	10.40	4.90	4.90	158
8 x 8	1.60	1.05	1.20	47	10 x 24	12.15	5.35	5.35	176
					10 x 30	19.50	8.00	8.00	216
					11 x 17	6.30	3.70	3.70	137
					11 x 18	6.75	3.95	3.95	145
					11 x 20	8.95	4.45	4.45	161

For Ventilators add to list: All sizes up to 14 x 14, \$0.50; 14 x 14 and larger, \$1.00.

Note—Sizes 8 x 20, 10 x 22, 10 x 30, 12 x 40, 14 x 24, 14 x 48, 15 x 15, 15 x 21, 16 x 30, 16 x 36, 16 x 48, 22 x 36, 22 x 38, 22 x 42, 28 x 36, 36 x 36, 36 x 40, 36 x 42, 36 x 48, 38 x 38, 38 x 40, 38 x 42 made in Plain Lattice only.

REGISTERS, FACES, BORDERS

JAPANNED—BLACK

Size	Register, Vertical Wheel	Register Face	Floor Border	Capacity of Ferrosteel Registers, Sq. Inches	Size	Register, Vertical Wheel	Register Face	Floor Border	Capacity of Ferrosteel Registers, Sq. Inches
12 x 12	\$ 4.00	\$ 2.70	\$ 2.70	106	20 x 26	\$23.50	\$ 9.50	\$ 9.50	375
12 x 14	4.35	2.80	2.80	123	20 x 28	28.90	11.50	11.50	400
12 x 15	4.50	2.90	2.90	132	20 x 30	33.50	13.50	13.50	430
12 x 16	5.60	3.50	3.50	140	20 x 32	37.50	17.10	17.10	465
12 x 17	6.35	3.80	3.80	150	20 x 36	43.00	18.50	18.50	520
12 x 18	6.80	3.90	3.90	158	21 x 21	24.50	9.75	9.75	310
12 x 19	7.50	4.00	4.00	167	21 x 25	28.00	11.10	11.10	370
12 x 20	9.00	4.50	4.50	176	21 x 29	29.00	11.60	11.60	426
12 x 24	12.25	5.50	5.50	210	21 x 33	42.00	17.90	17.90	485
12 x 30	20.00	8.20	8.20	260	21 x 37	49.00	21.50	21.50	543
12 x 32	24.50	9.75	9.75	280	21 x 39	54.00	24.90	24.90	596
12 x 36	26.75	10.25	10.25	315	22 x 22	28.50	11.40	11.40	350
12 x 51	46.00	20.00	20.00	448	22 x 24	29.50	11.80	11.80	385
14 x 14	7.90	4.05	4.05	144	22 x 26	31.00	13.10	13.10	420
14 x 15	8.25	4.20	4.20	154	22 x 28	33.90	13.90	13.90	450
14 x 16	8.50	4.30	4.30	165	22 x 30	36.00	16.00	16.00	480
14 x 18	9.00	4.50	4.50	185	22 x 32	42.00	17.50	17.50	510
14 x 20	9.50	4.80	4.80	217	22 x 36	47.50	20.50	20.50	590
14 x 22	10.50	5.00	5.00	226	22 x 38	52.00	22.50	22.50	627
14 x 24	14.90	6.90	6.90	252	22 x 42	64.00	27.00	27.00	693
14 x 48	46.20	20.00	20.00	492	24 x 24	30.00	12.00	12.00	403
15 x 15	10.00	4.90	4.90	169	24 x 27	33.95	14.00	14.00	453
15 x 21	12.50	6.20	6.20	235	24 x 30	38.00	17.25	17.25	504
15 x 25	17.50	7.10	7.10	275	24 x 32	42.50	18.00	18.00	537
15 x 30	27.50	10.75	10.75	330	24 x 36	50.00	22.00	22.00	604
15 x 34	31.75	13.75	13.75	374	24 x 45	67.50	28.50	28.50	755
16 x 16	11.00	5.10	5.10	188	27 x 27	37.25	17.00	17.00	510
16 x 18	12.00	5.30	5.30	210	27 x 38	56.00	25.00	25.00	718
16 x 20	12.35	6.10	6.10	235	28 x 28	44.00	19.00	19.00	565
16 x 22	14.75	6.70	6.70	258	28 x 30	48.50	21.00	21.00	610
16 x 24	15.00	7.00	7.00	280	28 x 32	53.00	24.50	24.50	650
16 x 28	24.60	10.00	10.00	330	28 x 36	64.00	27.00	27.00	725
16 x 30	27.90	11.00	11.00	352	30 x 30	49.00	21.50	21.50	630
16 x 32	31.00	13.10	13.10	376	30 x 36	67.50	28.50	28.50	755
18 x 18	18.50	7.20	7.20	237	30 x 42	77.50	33.00	29.50	880
18 x 20	19.50	7.60	7.60	270	30 x 48	95.00	39.00	31.00	1000
18 x 21	20.50	7.75	7.75	277	36 x 36	80.00	35.00	29.50	900
18 x 24	21.50	8.35	8.35	316	36 x 40	105.00	44.00	32.10	1000
18 x 27	27.50	10.75	10.75	356	36 x 42	112.00	46.00	34.00	1088
18 x 30	31.25	13.25	13.25	396	36 x 48	132.00	54.00	40.00	1244
18 x 36	38.00	17.25	17.25	475	38 x 38	100.00	43.50	32.00	1025
20 x 20	19.75	8.00	8.00	290	38 x 40	112.00	46.00	34.00	1060
20 x 22	21.60	8.40	8.40	320	38 x 42	120.00	50.00	36.00	1100

For Ventilators add to list: All sizes up to 14 x 14, \$0.50; 14 x 14 and larger, \$1.00.

REGISTERS, FACES, BORDERS

JAPANNED—WHITE

Size	Register, Vertical Wheel	Register Face	Size	Register, Vertical Wheel	Register Face
4 x 6	\$ 1.70	\$ 0.85	8 x 8	\$ 1.95	\$ 1.40
4 x 8	1.80	.90	8 x 10	2.00	1.45
4 x 10	1.90	1.10	8 x 12	2.30	1.70
4 x 12	2.20	1.35	8 x 13	3.30	2.40
4 x 13	3.00	1.50	8 x 14	3.60	2.60
4 x 15	3.60	1.80	8 x 15	4.55	3.35
4 x 18	4.65	1.95	8 x 16	5.40	3.60
4 x 21	6.00	3.25	8 x 18	7.90	4.80
4 x 24	7.00	3.75	8 x 20	10.40	5.60
			8 x 21	10.80	5.80
			8 x 24	12.40	6.00
5 x 8	1.90	1.25	8 x 27	15.00	6.80
5 x 9	1.90	1.30	8 x 30	16.30	7.90
5 x 10	1.95	1.40			
5 x 11	2.15	1.50			
5 x 12	2.25	1.60	9 x 9	2.40	1.80
5 x 13	3.10	1.85	9 x 12	2.55	1.90
5 x 14	3.40	2.00	9 x 13	3.55	2.55
5 x 15	4.30	2.35	9 x 14	3.70	2.75
5 x 16	4.65	2.55	9 x 15	4.75	3.45
5 x 17	5.00	2.80	9 x 16	5.65	3.65
5 x 18	6.20	3.15	9 x 17	7.15	4.45
			9 x 18	8.00	4.95
			9 x 19	8.90	5.40
6 x 6	1.80	1.20	9 x 20	10.25	5.65
6 x 8	1.85	1.30	9 x 22	11.50	6.15
6 x 9	1.90	1.35	9 x 24	13.20	6.50
6 x 10	1.95	1.40	9 x 25	15.65	7.40
6 x 12	2.25	1.60	9 x 26	16.75	7.85
6 x 14	3.45	2.10	9 x 28	18.00	8.45
6 x 16	4.80	2.80	9 x 30	19.25	8.85
6 x 18	6.25	3.30			
6 x 20	7.20	3.70			
6 x 22	8.40	4.40	10 x 10	2.85	2.15
6 x 24	9.60	5.30	10 x 12	2.90	2.20
6 x 28	11.00	5.75	10 x 14	3.80	2.85
6 x 30	13.00	6.25	10 x 16	5.85	3.95
6 x 32	14.25	6.50	10 x 18	8.05	5.05
			10 x 20	10.50	5.75
			10 x 22	12.00	6.25
7 x 7	1.90	1.35	10 x 24	13.40	6.60
7 x 10	2.00	1.40	10 x 30	21.45	9.95
7 x 12	2.30	1.65			
7 x 14	3.55	2.50	11 x 17	7.55	4.95
7 x 15	4.50	3.30	11 x 18	8.10	5.30
			11 x 20	10.75	6.25

For Ventilators add to list: All sizes up to 14 x 14, \$0.50; 14 x 14 and larger, \$1.00.

REGISTERS, FACES, BORDERS
JAPANNED—WHITE

Size	Register, Vertical Wheel	Register Face	Size	Register, Vertical Wheel	Register Face
12 x 12	\$ 4.80	\$ 3.50	20 x 30	\$36.85	\$16.85
12 x 14	5.25	3.65	20 x 32	41.25	20.85
12 x 15	5.40	3.80	20 x 36	47.30	22.80
12 x 16	6.70	4.60			
12 x 17	7.60	5.05	21 x 21	26.95	12.20
12 x 18	8.15	5.25	21 x 25	30.80	13.90
12 x 19	9.00	5.50	21 x 29	31.90	14.50
12 x 20	10.80	6.30	21 x 33	46.20	22.10
12 x 24	13.50	6.75	21 x 37	53.90	26.40
12 x 30	22.00	10.20	21 x 39	59.40	30.30
12 x 32	26.95	12.20			
12 x 36	29.40	12.90	22 x 22	31.35	14.25
12 x 51	50.60	24.60	22 x 24	32.45	14.75
14 x 14	9.45	5.60	22 x 26	34.10	16.20
14 x 15	9.90	5.85	22 x 28	37.30	17.30
14 x 16	10.20	6.00	22 x 30	39.60	19.60
14 x 18	10.80	6.30	22 x 32	46.20	21.70
14 x 20	11.25	6.40	22 x 36	52.25	25.25
14 x 22	12.00	6.50	22 x 38	57.20	27.70
14 x 24	16.40	8.40	22 x 42	70.40	33.40
14 x 48	50.60	24.60			
15 x 15	11.25	6.15	24 x 24	33.00	15.00
15 x 21	13.75	7.45	24 x 27	37.35	17.40
15 x 25	19.25	8.85	24 x 30	41.80	21.05
15 x 30	30.25	13.20	24 x 32	46.75	22.25
15 x 34	34.90	16.90	24 x 36	55.00	27.00
15 x 34			24 x 45	74.25	35.25
16 x 16	12.20	6.20			
16 x 18	13.20	6.50	27 x 27	40.95	20.70
16 x 20	13.60	7.35	27 x 38	61.60	30.60
16 x 22	16.20	8.15			
16 x 24	16.50	8.50	28 x 28	48.40	23.40
16 x 28	27.05	12.45	28 x 30	53.35	25.85
16 x 30	30.70	13.80	28 x 32	58.30	29.80
16 x 32	34.10	16.20	28 x 36	70.40	33.40
18 x 18	20.35	9.05	30 x 30	53.90	26.40
18 x 20	21.45	9.55	30 x 36	74.25	35.25
18 x 21	22.55	9.80	30 x 42	85.25	40.75
18 x 24	23.65	10.50	30 x 48	104.50	48.50
18 x 27	30.25	13.50			
18 x 30	34.35	16.35	36 x 36	88.00	43.00
18 x 36	41.80	21.05	36 x 40	115.50	54.50
			36 x 42	123.00	57.20
20 x 20	21.75	10.00	36 x 48	145.20	67.20
20 x 22	23.75	10.55			
20 x 24	24.20	10.80	38 x 38	110.00	53.50
20 x 26	25.85	11.85	38 x 40	123.20	57.20
20 x 28	31.80	14.40	38 x 42	132.00	62.00

REGISTERS, FACES, BORDERS

WHITE PORCELAIN ENAMEL

Size	Register	Border	Size	Register	Border
4 x 6	\$ 3.00	\$ 2.70	8 x 8	\$ 5.50	\$ 4.95
4 x 8	3.40	3.05	8 x 10	6.90	6.20
4 x 10	3.75	3.40	8 x 12	8.30	7.45
4 x 12	5.60	5.00	8 x 13	9.00	8.10
4 x 13	6.00	5.40	8 x 14	9.70	8.70
4 x 15	7.00	6.30	8 x 15	10.30	9.25
4 x 18	8.40	7.55	8 x 16	11.20	10.10
4 x 21	9.80	8.80	8 x 18	12.40	11.15
4 x 24	11.10	10.00	8 x 20	13.50	12.15
5 x 8	4.20	3.80	8 x 21	14.50	13.05
5 x 9	4.70	4.25	8 x 24	17.50	15.75
5 x 10	5.30	4.80	8 x 27	20.00	18.00
5 x 11	5.90	5.30	8 x 30	21.60	19.45
5 x 12	6.30	5.65	9 x 9	6.90	6.20
5 x 13	6.80	6.10	9 x 12	9.10	8.20
5 x 14	7.40	6.65	9 x 13	9.80	8.80
5 x 15	7.90	7.10	9 x 14	10.60	9.55
5 x 16	8.40	7.55	9 x 15	11.30	10.17
5 x 17	8.90	8.00	9 x 16	12.10	10.90
5 x 18	9.50	8.55	9 x 17	12.90	11.60
6 x 6	3.40	3.05	9 x 18	13.60	12.25
6 x 8	4.60	4.15	9 x 19	14.40	12.95
6 x 9	5.10	4.60	9 x 20	15.10	13.60
6 x 10	5.70	5.15	9 x 22	16.60	14.95
6 x 12	6.80	6.10	9 x 24	18.25	16.40
6 x 14	8.00	7.20	9 x 25	20.50	18.45
6 x 16	9.10	8.20	9 x 26	21.65	19.50
6 x 18	10.30	9.25	9 x 28	24.25	21.85
6 x 20	11.40	10.25	9 x 30	25.25	22.75
6 x 22	12.50	11.25	10 x 10	8.20	7.40
6 x 24	14.00	12.60	10 x 12	9.80	8.80
6 x 28	17.00	15.30	10 x 14	11.50	10.35
6 x 30	18.50	16.65	10 x 16	13.10	11.80
6 x 32	21.00	18.90	10 x 18	14.80	13.30
7 x 7	4.75	4.30	10 x 20	16.40	14.75
7 x 10	6.60	5.95	10 x 22	18.50	16.65
7 x 12	7.90	7.10	10 x 24	21.00	18.90
7 x 14	9.20	8.30	10 x 30	30.00	27.00
7 x 15	9.90	8.90	11 x 17	15.30	13.75
			11 x 18	16.20	14.60
			11 x 20	18.00	16.20

REGISTERS, FACES, BORDERS

WHITE PORCELAIN ENAMEL

Size	Register	Border	Size	Register	Border
12 x 12	\$11.80	\$10.60	20 x 28	\$ 45.50	\$ 40.95
12 x 14	13.80	12.40	20 x 30	49.00	44.10
12 x 15	14.80	13.30	20 x 32	52.00	46.80
12 x 16	15.80	14.20	20 x 36	59.00	53.10
12 x 17	16.70	15.00			
12 x 18	17.70	15.90	21 x 21	37.00	29.60
12 x 19	18.70	16.80	21 x 25	44.00	35.20
12 x 20	20.00	18.00	21 x 29	52.00	41.60
12 x 24	23.25	20.95	21 x 33	58.00	46.40
12 x 30	30.00	27.00	21 x 37	65.00	52.00
12 x 32	34.50	31.00	21 x 39	74.00	59.20
12 x 36	38.25	34.45			
12 x 51	69.50	62.55	22 x 22	41.00	32.80
			22 x 24	44.00	35.20
14 x 14	16.20	14.60	22 x 26	48.00	38.40
14 x 15	17.30	15.55	22 x 28	52.00	41.60
14 x 16	18.40	16.55	22 x 30	55.00	44.00
14 x 18	20.10	18.10	22 x 32	59.00	47.20
14 x 20	23.30	20.95	22 x 36	66.00	52.80
14 x 22	27.40	24.65	22 x 38	70.00	56.00
14 x 24	29.50	26.55	22 x 42	82.50	66.00
14 x 48	69.50	62.55			
			24 x 24	49.00	39.20
15 x 15	18.50	16.65	24 x 27	56.00	44.80
15 x 21	26.50	23.85	24 x 30	62.00	49.60
15 x 25	31.00	27.90	24 x 32	66.00	52.00
15 x 30	37.50	33.75	24 x 36	74.00	59.20
15 x 34	46.00	41.40	24 x 45	92.00	73.60
16 x 16	21.20	19.05	27 x 27	66.00	52.80
16 x 18	23.80	21.40	27 x 38	94.00	75.20
16 x 20	26.30	23.65			
16 x 22	29.00	26.10	28 x 28	72.00	57.60
16 x 24	31.60	28.45	28 x 30	77.00	61.60
16 x 28	36.70	33.05	28 x 32	84.00	67.20
16 x 30	39.40	35.45	28 x 36	92.00	73.60
16 x 32	42.50	38.25			
			30 x 30	85.00	68.00
18 x 18	26.60	23.95	30 x 36	102.00	81.60
18 x 20	30.00	27.00	30 x 42	119.00	95.20
18 x 21	32.10	28.90	30 x 48	136.00	108.80
18 x 24	35.50	31.95			
18 x 27	39.90	35.90	36 x 36	127.00	101.60
18 x 30	44.30	39.85	36 x 40	142.00	113.60
18 x 36	54.10	48.70	36 x 42	150.00	120.00
			36 x 48	173.00	138.40
20 x 20	32.50	29.25			
20 x 22	35.70	32.15	38 x 38	145.00	116.00
20 x 24	39.00	35.10	38 x 40	153.00	122.40
20 x 26	42.00	37.80	38 x 42	160.00	128.00

REGISTERS, FACES, BORDERS

**ELECTRO-PLATED NICKEL,
OR BRONZED IN GOLD, SILVER OR COPPER**

Size	Register, Vertical Wheel	Register Face	Border	Size	Register, Vertical Wheel	Register Face	Border
4 x 6	\$ 2.00	\$ 1.15	\$ 1.75	8 x 8	\$ 3.00	\$ 2.45	\$ 2.60
4 x 8	2.20	1.30	1.85	8 x 10	3.15	2.60	2.75
4 x 10	2.40	1.60	2.00	8 x 12	3.65	3.05	3.25
4 x 12	2.80	2.15	2.55	8 x 13	4.75	3.85	3.85
4 x 13	3.50	2.60	3.25	8 x 14	5.10	3.95	3.95
4 x 15	4.00	2.70	3.40	8 x 15	6.00	4.80	4.80
4 x 18	5.00	3.20	4.65	8 x 16	6.75	5.00	5.00
4 x 21	6.50	4.25	5.15	8 x 18	9.40	6.00	6.00
4 x 24	7.50	4.75	5.75	8 x 20	11.70	6.90	6.90
				8 x 21	12.50	7.50	7.50
5 x 8	2.75	2.10	2.35	8 x 24	15.25	8.70	8.70
5 x 9	2.90	2.30	2.50	8 x 27	17.75	9.55	9.55
5 x 10	2.95	2.40	2.55	8 x 30	19.50	10.50	10.50
5 x 11	3.25	2.60	2.80				
5 x 12	3.45	2.85	3.00	9 x 9	3.90	3.30	3.50
5 x 13	4.25	3.00	3.45	9 x 12	4.00	3.35	3.55
5 x 14	4.80	3.50	3.90	9 x 13	4.95	4.00	4.00
5 x 15	5.60	3.65	4.00	9 x 14	5.20	4.25	4.25
5 x 16	5.90	3.80	4.60	9 x 15	6.50	4.90	5.20
5 x 17	6.20	4.00	4.70	9 x 16	7.15	5.15	5.30
5 x 18	7.25	4.10	5.20	9 x 17	8.70	6.00	6.00
				9 x 18	9.35	6.30	6.30
6 x 6	2.70	2.10	2.35	9 x 19	10.50	7.05	7.05
6 x 8	2.80	2.25	2.40	9 x 20	11.85	7.40	7.40
6 x 9	2.95	2.40	2.55	9 x 22	13.95	8.10	8.10
6 x 10	3.00	2.45	2.60	9 x 24	16.00	9.30	9.30
6 x 12	3.50	2.90	3.10	9 x 25	18.25	10.00	10.00
6 x 14	4.95	3.75	4.00	9 x 26	19.25	10.25	10.25
6 x 16	6.00	4.00	4.70	9 x 28	21.75	11.90	11.90
6 x 18	7.00	4.50	5.50	9 x 30	22.50	12.10	12.10
6 x 20	8.20	4.75	5.80				
6 x 22	10.00	6.00	6.95	10 x 10	4.35	3.65	3.70
6 x 24	12.00	7.00	7.50	10 x 12	4.40	3.70	3.75
6 x 28	14.50	8.00	9.00	10 x 14	5.25	4.30	4.30
6 x 30	16.50	8.90	10.00	10 x 16	7.20	5.30	5.30
6 x 32	18.00	9.50	10.50	10 x 18	9.45	6.45	6.45
				10 x 20	12.00	7.50	7.50
7 x 7	2.90	2.35	2.55	10 x 22	14.50	9.00	9.00
7 x 10	3.10	2.55	2.70	10 x 24	16.25	9.45	9.45
7 x 12	3.60	2.95	3.20				
7 x 14	5.00	3.95	3.95	11 x 17	8.95	6.40	6.40
7 x 15	5.90	4.70	4.70	11 x 18	9.50	6.70	6.70
				11 x 20	12.00	7.50	7.50

REGISTERS, FACES, BORDERS
ELECTRO-PLATED NICKEL,
OR BRONZED IN GOLD, SILVER OR COPPER

Size	Register Vertical Wheel	Register Face	Border	Size	Register, Vertical Wheel	Register Face	Border
12 x 12	\$ 6.35	\$ 5.05	\$ 5.05	20 x 26	\$32.00	\$17.50	\$17.50
12 x 14	6.85	5.35	5.35	20 x 28	37.40	20.00	20.00
12 x 15	7.00	5.40	5.40	20 x 30	43.00	23.50	23.50
12 x 16	8.25	6.15	6.15	20 x 32	48.50	28.10	26.00
12 x 17	9.00	6.45	6.45	20 x 36	54.00	29.50	28.50
12 x 18	9.55	6.65	6.65	21 x 21	31.00	16.25	16.25
12 x 19	10.35	6.85	6.85	21 x 25	35.50	18.60	18.60
12 x 20	12.20	7.60	7.60	21 x 29	40.50	22.20	22.20
12 x 24	16.30	9.55	9.55	21 x 33	52.00	29.35	28.35
12 x 30	26.00	14.20	14.20	21 x 37	60.00	35.00	31.65
12 x 32	31.50	16.75	16.75	21 x 39	67.00	38.50	34.50
12 x 36	33.75	17.75	17.75	22 x 22	36.50	19.40	19.40
12 x 51	60.00	35.25	31.65	22 x 24	37.90	20.20	20.20
14 x 14	11.00	7.15	7.15	22 x 26	41.00	23.00	23.00
14 x 15	11.25	7.25	7.25	22 x 28	44.00	24.00	24.00
14 x 16	11.50	7.30	7.30	22 x 30	46.50	26.50	25.50
14 x 18	12.00	7.50	7.50	22 x 32	54.00	29.50	28.50
14 x 20	13.00	8.50	8.50	22 x 36	60.50	35.00	31.75
14 x 22	14.50	9.00	9.00	22 x 38	65.50	37.50	34.25
14 x 24	19.50	11.50	11.50	22 x 42	75.00	43.00	35.00
14 x 48	60.00	35.25	31.65	24 x 24	40.00	22.00	22.00
15 x 15	14.00	8.90	8.90	24 x 27	45.00	25.00	25.00
15 x 21	16.85	10.50	10.50	24 x 30	50.00	29.25	28.25
15 x 25	23.00	12.60	12.60	24 x 32	55.50	31.00	30.00
15 x 30	33.00	18.00	18.00	24 x 36	65.50	37.50	34.25
15 x 34	41.25	23.25	23.25	24 x 45	89.50	50.50	40.00
16 x 16	15.00	9.10	9.10	27 x 27	49.25	29.00	28.00
16 x 18	16.20	9.50	9.50	27 x 38	76.00	45.00	36.00
16 x 20	16.55	10.30	10.30	28 x 28	57.50	32.50	31.00
16 x 22	19.50	11.50	11.50	28 x 30	61.50	35.50	32.00
16 x 24	20.00	12.00	12.00	28 x 32	68.00	39.50	35.00
16 x 28	30.80	16.20	16.20	28 x 36	86.00	49.00	37.00
16 x 30	35.00	18.25	18.25	30 x 30	65.00	37.00	34.00
16 x 32	38.25	20.35	20.35	30 x 36	90.00	51.00	41.00
18 x 18	23.75	12.45	12.45	30 x 42	102.00	57.50	50.50
18 x 20	24.75	12.85	12.85	30 x 48	124.00	68.00	60.00
18 x 21	26.00	13.25	13.25	36 x 36	105.00	60.00	54.50
18 x 24	27.75	14.60	14.60	36 x 40	135.00	74.00	62.10
18 x 27	35.00	18.25	18.25	36 x 42	143.00	77.00	65.00
18 x 30	38.00	21.00	21.00	36 x 48	168.00	90.00	76.00
18 x 36	48.50	28.10	26.00	38 x 38	130.00	71.00	59.00
20 x 20	24.75	13.00	13.00	38 x 40	142.00	76.00	64.50
20 x 22	27.60	14.40	14.40	38 x 42	155.00	85.00	71.00
20 x 24	28.20	14.80	14.80				

REGISTERS, FACES, BORDERS

SOLID BRONZE AND BRASS

Size	Register	Face	Border	Size	Register	Face	Border
4 x 6	\$ 2.80	\$ 2.20	\$ 5.40	8 x 8	\$ 5.60	\$ 4.35	\$ 8.95
4 x 8	2.90	2.35	5.65	8 x 10	7.00	5.55	10.00
4 x 10	3.75	3.00	6.60	8 x 12	8.60	6.90	11.10
4 x 12	4.50	3.60	7.50	8 x 13	9.10	7.30	11.65
4 x 13	4.90	3.85	8.05	8 x 14	9.80	8.10	12.10
4 x 15	5.60	4.35	8.95	8 x 15	10.60	8.65	12.65
4 x 18	6.75	5.30	9.95	8 x 16	11.20	9.25	12.90
4 x 21	7.85	6.05	10.80	8 x 18	12.80	10.60	13.65
4 x 24	9.00	6.95	11.50	8 x 20	14.00	12.00	14.40
				8 x 21	15.00	13.80	16.15
5 x 8	3.55	2.80	6.15	8 x 24	18.00	15.60	17.70
5 x 9	4.00	3.20	6.65	8 x 27	20.50	17.30	18.00
5 x 10	4.45	3.50	7.15	8 x 30	22.25	18.65	19.00
5 x 11	4.90	3.85	8.05				
5 x 12	5.35	4.25	8.20	9 x 9	7.20	5.95	10.10
5 x 13	5.75	4.55	9.00	9 x 12	9.60	8.00	12.00
5 x 14	6.20	4.95	9.20	9 x 13	10.45	8.60	12.60
5 x 15	6.65	5.25	9.50	9 x 14	11.20	9.25	12.90
5 x 16	7.15	5.65	10.05	9 x 15	12.05	10.00	13.50
5 x 17	7.55	6.00	10.15	9 x 16	12.80	10.60	13.65
5 x 18	8.00	6.25	10.95	9 x 17	13.65	11.25	13.70
				9 x 18	14.45	12.45	14.50
6 x 6	3.60	2.90	6.25	9 x 19	15.25	13.90	16.20
6 x 8	4.10	3.30	6.70	9 x 20	16.10	14.00	16.30
6 x 9	4.60	3.70	7.55	9 x 22	17.65	14.65	16.60
6 x 10	5.10	4.05	8.10	9 x 24	19.25	16.10	17.90
6 x 12	6.15	4.90	9.15	9 x 25	21.10	17.50	18.20
6 x 14	7.15	5.65	10.05	9 x 26	22.10	18.60	18.90
6 x 16	8.20	6.50	11.00	9 x 28	25.15	21.00	21.00
6 x 18	9.30	7.35	11.75	9 x 30	26.20	22.50	22.00
6 x 20	10.25	8.15	12.50				
6 x 22	12.00	9.50	13.45	10 x 10	9.50	7.50	11.80
6 x 24	14.00	12.00	14.40	10 x 12	11.00	9.15	12.80
6 x 28	16.75	14.20	16.35	10 x 14	12.65	10.55	13.60
6 x 30	19.00	16.00	17.80	10 x 16	14.45	12.45	14.50
6 x 32	22.00	18.50	18.80	10 x 18	16.10	14.00	16.30
				10 x 20	18.00	15.60	17.70
7 x 7	4.25	3.40	6.75	10 x 22	20.50	17.30	18.00
7 x 10	6.05	4.85	9.10	10 x 24	21.70	18.25	18.70
7 x 12	7.35	6.00	10.20				
7 x 14	8.50	6.85	11.05	11 x 17	17.15	14.45	16.50
7 x 15	9.10	7.30	11.65	11 x 18	19.00	16.00	17.80
				11 x 20	20.80	17.40	18.10

REGISTERS, FACES, BORDERS

SOLID BRONZE AND BRASS

Size	Register	Face	Border	Size	Register	Face	Border
12 x 12	\$13.75	\$11.45	\$14.15	20 x 26	\$55.75	\$47.00	\$34.65
12 x 14	16.10	14.00	16.30	20 x 28	60.00	49.75	36.00
12 x 15	16.80	14.25	16.40	20 x 30	64.35	55.10	37.00
12 x 16	18.00	15.60	17.70	20 x 32	68.65	58.00	39.00
12 x 17	19.10	16.05	17.85	20 x 36	77.20	66.15	50.00
12 x 18	20.50	17.30	18.00	21 x 21	48.30	41.15	31.50
12 x 19	21.35	18.10	18.25	21 x 25	57.00	48.00	35.00
12 x 20	22.40	19.00	19.10	21 x 29	66.35	56.75	37.30
12 x 24	26.95	22.80	22.15	21 x 33	75.45	65.00	48.50
12 x 30	33.65	28.50	24.75	21 x 37	84.65	72.65	55.00
12 x 32	35.90	30.40	25.95	21 x 39	89.20	76.60	58.50
12 x 36	40.40	34.25	28.25	22 x 22	52.70	45.00	34.50
12 x 51	71.00	59.00	42.00	22 x 24	57.00	48.00	35.00
14 x 14	19.00	16.00	17.80	22 x 26	62.70	50.00	36.50
14 x 15	20.35	17.25	17.95	22 x 28	67.10	57.50	38.00
14 x 16	21.70	18.25	18.70	22 x 30	71.90	61.70	43.00
14 x 18	24.50	20.50	20.50	22 x 32	76.65	66.00	49.25
14 x 20	27.10	23.10	22.50	22 x 36	86.25	75.00	57.00
14 x 22	29.85	25.45	23.60	22 x 38	91.00	78.00	60.00
14 x 24	32.50	27.50	23.65	22 x 42	105.00	86.40	65.00
14 x 48	71.00	59.00	42.00	24 x 24	66.35	56.75	37.30
15 x 15	21.70	18.25	18.70	24 x 27	74.00	64.00	47.50
15 x 21	32.75	28.00	24.25	24 x 30	82.00	70.00	54.00
15 x 25	36.90	31.50	27.00	24 x 32	86.25	75.00	57.00
15 x 30	46.35	39.90	31.00	24 x 36	98.40	85.10	64.00
15 x 34	50.20	42.90	32.50	24 x 48	123.00	106.00	80.00
16 x 16	25.15	21.00	21.00	27 x 27	86.25	75.00	57.00
16 x 18	29.00	24.80	23.50	27 x 38	121.90	104.50	78.00
16 x 20	32.75	28.00	24.25	28 x 28	93.15	80.00	62.00
16 x 22	35.40	30.20	25.55	28 x 30	94.30	81.00	63.00
16 x 24	38.65	33.00	27.60	28 x 32	106.40	92.00	69.00
16 x 28	45.10	37.20	29.75	28 x 36	119.75	102.00	76.00
16 x 30	48.30	41.15	31.50	30 x 30	111.35	97.00	74.00
16 x 32	51.00	43.40	33.35	30 x 36	128.15	110.00	83.00
18 x 18	33.65	28.50	24.75	30 x 42	156.00	135.15	110.00
18 x 20	36.00	30.50	26.20	30 x 48	178.20	155.00	125.00
18 x 21	39.30	33.70	27.65	36 x 36	156.00	135.15	110.00
18 x 24	44.95	37.00	29.50	36 x 40	178.20	155.00	125.00
18 x 27	50.20	42.90	32.50	36 x 42	184.00	160.00	130.00
18 x 30	56.15	47.75	34.75	36 x 48	207.40	178.00	167.00
18 x 36	67.35	57.75	38.30	38 x 38	178.20	155.00	125.00
20 x 20	43.90	36.75	29.00	38 x 40	184.00	160.00	130.00
20 x 22	48.30	41.15	31.50	38 x 42	192.50	165.00	135.00
20 x 24	51.50	44.00	33.50				

Faces and Wheels are of Solid Bronze or Brass, highly polished and lacquered. If Registers are for use in floor, it should be so stated in order that *strengthening bars* may be added. Round Registers are the same price as corresponding sizes of Square Registers.

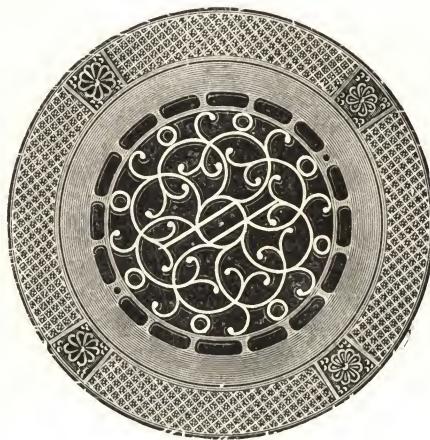
REGISTERS, FACES, BORDERS
ELECTRO-PLATED IN BRASS, BRONZE OR COPPER

Size	Register	Face	Border	Size	Register	Face	Border
4 x 6	\$ 2.20	\$ 1.35	\$ 2.10	8 x 8	\$ 3.70	\$ 3.15	\$ 3.65
4 x 8	2.40	1.50	2.15	8 x 10	3.85	3.30	3.90
4 x 10	2.60	1.80	2.40	8 x 12	4.40	3.75	4.40
4 x 12	3.10	2.45	3.00	8 x 13	5.75	4.85	5.30
4 x 13	3.80	2.90	3.75	8 x 14	6.20	5.10	5.60
4 x 15	4.30	3.00	4.00	8 x 15	7.00	5.80	6.40
4 x 18	5.40	3.60	5.00	8 x 16	8.00	6.25	7.00
4 x 21	7.00	4.75	6.00	8 x 18	10.70	7.30	8.00
4 x 24	8.10	5.35	7.00	8 x 20	13.00	8.25	9.00
				8 x 21	14.00	9.00	9.70
				8 x 24	17.00	10.50	11.10
5 x 8	3.00	2.35	2.90	8 x 27	19.75	11.50	12.20
5 x 9	3.15	2.50	3.10	8 x 30	21.60	12.60	13.50
5 x 10	3.25	2.70	3.25				
5 x 11	3.50	2.85	3.50				
5 x 12	3.90	3.30	3.75	9 x 9	4.90	4.30	4.75
5 x 13	4.60	3.50	4.00	9 x 12	5.10	4.45	5.00
5 x 14	5.20	3.90	4.50	9 x 13	6.15	5.20	5.70
5 x 15	6.10	4.15	4.90	9 x 14	6.50	5.50	5.95
5 x 16	6.40	4.30	5.60	9 x 15	7.80	6.20	7.00
5 x 17	6.80	4.60	5.80	9 x 16	8.55	6.55	7.10
5 x 18	7.85	4.75	6.30	9 x 17	9.30	7.60	8.00
				9 x 18	11.00	7.95	8.40
				9 x 19	12.20	8.75	9.15
6 x 6	3.00	2.40	2.95	9 x 20	13.65	9.20	9.70
6 x 8	3.10	2.50	3.00	9 x 22	16.00	10.15	10.50
6 x 9	3.40	2.85	3.45	9 x 24	18.10	11.40	11.90
6 x 10	3.50	2.95	3.60	9 x 25	20.50	12.25	12.50
6 x 12	4.20	3.60	4.10	9 x 26	21.65	12.65	12.90
6 x 14	5.75	4.50	5.30	9 x 28	24.25	14.40	14.80
6 x 16	6.90	4.90	6.10	9 x 30	25.25	14.80	15.10
6 x 18	8.00	5.50	7.00				
6 x 20	9.30	5.85	7.40				
6 x 22	11.25	7.25	8.65	10 x 10	5.35	4.65	5.20
6 x 24	13.30	8.30	9.30	10 x 12	5.50	4.80	5.35
6 x 28	16.00	9.50	11.00	10 x 14	6.55	5.60	6.00
6 x 30	18.25	10.65	12.10	10 x 16	8.60	6.70	7.20
6 x 32	21.00	12.50	12.60	10 x 18	11.00	8.00	8.55
				10 x 20	13.80	9.30	9.80
				10 x 22	16.50	11.00	11.00
				10 x 24	18.50	12.00	12.15
7 x 7	3.50	2.95	3.55				
7 x 10	3.80	3.25	3.80				
7 x 12	4.25	3.70	4.35	11 x 17	10.50	8.00	8.60
7 x 14	6.10	5.00	5.50	11 x 18	11.15	8.25	8.95
7 x 15	6.90	5.70	6.30	11 x 20	14.00	9.40	9.80

REGISTERS, FACES, BORDERS
ELECTRO-PLATED IN BRASS, BRONZE OR COPPER

Size	Register	Face	Border	Size	Register	Face	Border
12 x 12	\$ 7.90	\$ 6.60	\$ 7.10	20 x 26	\$42.00	\$27.50	\$22.00
12 x 14	8.25	6.75	7.35	20 x 28	45.50	30.00	24.50
12 x 15	8.50	6.90	7.60	20 x 30	49.00	32.50	26.00
12 x 16	9.75	7.65	8.25	20 x 32	52.00	34.00	27.50
12 x 17	10.60	8.05	8.65	20 x 36	59.00	39.00	31.50
12 x 18	11.25	8.35	9.00				
12 x 19	12.25	8.75	9.25	21 x 21	37.00	24.75	21.00
12 x 20	14.10	9.50	9.90	21 x 25	44.00	29.00	23.00
12 x 24	18.60	12.10	12.25	21 x 29	52.00	34.00	27.50
12 x 30	29.00	18.00	17.00	21 x 37	65.00	43.50	33.50
12 x 32	34.50	20.00	20.00	21 x 39	74.00	50.00	36.50
12 x 36	36.25	23.25	21.50				
12 x 51	69.50	46.50	35.75	22 x 22	41.00	27.00	21.75
				22 x 24	44.00	29.00	23.00
14 x 14	14.30	9.60	10.00	22 x 26	48.00	32.00	25.50
14 x 15	15.30	10.00	10.50	22 x 28	52.00	34.00	27.50
14 x 16	16.50	11.00	11.00	22 x 30	55.00	36.50	28.75
14 x 18	18.50	12.00	12.15	22 x 32	59.00	39.00	31.50
14 x 20	20.50	13.00	12.75	22 x 36	66.00	44.50	34.00
14 x 22	22.50	14.50	13.50	22 x 38	70.00	47.00	36.00
14 x 24	26.00	16.50	15.00	22 x 42	82.50	53.50	39.50
14 x 48	69.50	46.50	35.75				
				24 x 24	49.00	32.50	26.00
15 x 15	17.00	11.90	12.00	24 x 27	56.00	37.00	29.00
15 x 21	25.00	16.25	14.50	24 x 30	62.00	41.50	32.00
15 x 25	31.00	20.00	18.50	24 x 32	66.00	44.50	34.00
15 x 30	37.50	25.00	21.60	24 x 36	74.00	50.30	36.50
15 x 34	46.00	30.50	25.00	24 x 45	92.00	63.00	45.00
16 x 16	19.75	12.80	12.50	27 x 27	66.00	44.50	34.00
16 x 18	22.25	14.25	13.25	27 x 38	94.00	64.00	46.00
16 x 20	24.60	16.00	14.00				
16 x 22	28.00	18.00	16.00	28 x 28	72.00	49.00	36.40
16 x 24	29.60	19.25	17.10	28 x 30	76.00	52.50	37.00
16 x 28	35.00	22.75	18.80	28 x 32	84.00	55.00	40.50
16 x 30	37.50	25.00	21.60	28 x 36	92.00	63.00	45.00
16 x 32	42.00	27.50	22.00				
				30 x 30	85.00	56.00	41.00
18 x 18	26.00	16.50	15.00	30 x 36	102.00	70.00	48.00
18 x 20	29.00	18.00	17.00	30 x 42	119.00	87.00	60.00
18 x 21	30.00	19.00	18.00	30 x 48	136.00	94.00	72.00
18 x 24	34.25	22.50	18.75				
18 x 27	39.00	25.50	21.70	36 x 36	127.00	83.00	66.00
18 x 30	43.00	28.50	22.70	36 x 40	142.00	95.00	76.00
18 x 36	54.00	36.00	28.00	36 x 42	150.00	96.50	80.50
				36 x 48	173.00	103.00	87.00
20 x 20	32.40	21.20	18.10				
20 x 22	35.70	23.50	19.00	38 x 38	145.00	95.50	77.00
20 x 24	39.00	25.50	21.70	38 x 40	153.00	97.00	81.50

ROUND REGISTERS, FACES AND BORDERS



INDIAN DESIGN

Size, Inches	Japanned Black			Japanned White		Bronzed, Gold, Silver, Etc.		Electro-plated Brass, Bronze and Copper		Electro-plated Nickel	
	Regis- ter	Face	Border	Regis- ter	Face	Regis- ter	Border	Regis- ter	Border	Regis- ter	Border
6	\$ 1.50	\$ 0.90	\$ 1.15	\$ 1.80	\$ 1.20	\$ 2.70	\$ 2.35	\$ 3.00	\$ 2.95	\$ 2.70	\$ 2.35
7	1.55	1.00	1.20	1.90	1.35	2.90	2.55	3.50	3.55	2.90	2.55
8	1.60	1.05	1.20	1.95	1.40	3.00	2.60	3.70	3.65	3.00	2.60
9	2.00	1.40	1.60	2.40	1.80	3.90	3.50	4.90	4.75	3.90	3.50
10	2.35	1.65	1.70	2.85	2.15	4.35	3.70	5.35	5.20	4.35	3.70
12	4.00	2.70	2.70	4.80	3.50	6.35	5.05	7.90	7.10	6.35	5.05
14	7.90	4.05	4.05	9.45	5.60	11.00	7.15	14.30	10.00	11.00	7.15
16	11.00	5.10	5.10	12.20	6.20	15.00	9.10	19.75	12.50	15.00	9.10
18	18.50	7.20	7.20	20.35	9.05	23.75	12.45	26.00	15.00	23.75	12.45
20	19.75	8.00	8.00	21.75	10.00	24.75	13.00	32.40	18.10	24.75	13.00
24	30.00	12.00	12.00	33.00	15.00	40.00	22.00	49.00	26.00	40.00	22.00
28	44.00	19.00	19.00	48.40	23.40	57.50	31.00	72.00	36.40	57.50	31.00
30	49.00	21.50	21.50	53.90	26.40	65.00	34.00	85.00	41.00	65.00	34.00
36	80.00	35.00	29.50	88.00	43.00	105.00	54.50	127.00	66.00	105.00	54.50
42	.....	48.00	37.50	.....	.....	.....	.....	.....	.....	.....	.....
48	.....	60.00	45.00	.....	.....	.....	.....	.....	.....	.....	.....

For Ventilators add to list: All sizes up to 14 inches, \$0.50;

14 inches and larger, \$1.00.

SMOKE PIPE REGISTER AND CEILING PLATE

INDIAN DESIGN



Register finished in black japan. Ceiling plate finished in white japan. Both have removable caps for use when smoke pipe is taken down.

Size of stove pipe.....	6-inch	7-inch	8-inch	9-inch
Black japanned register and cap.....	\$1.50	\$1.70	\$2.00	\$2.50
White japanned ceiling plate and cap.....	1.50	1.70	2.00	2.50

Packed one-fourth dozen in a case.

Discount.....per cent.

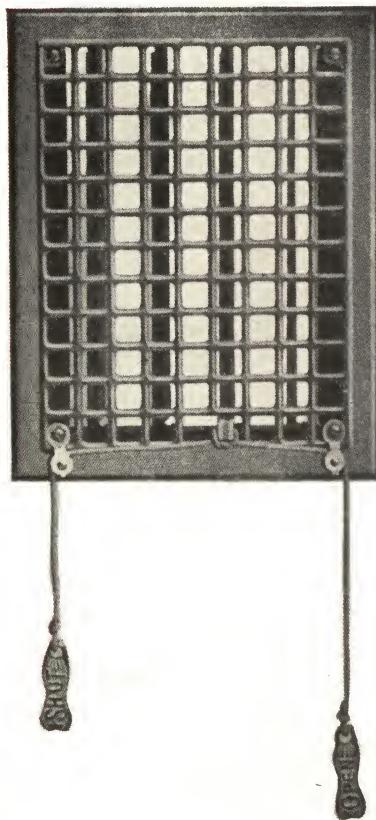
INDICATOR HANDLES FOR CORDS, INDICATING
“OPEN” OR “SHUT”

Japanned, Per Pair Net	Bronzed, Per Pair Net	Nickel Plated, Per Pair Net	Bronze Metal, Per Pair Net	Cord, Per Yard Net	No. 00 Safety Chain, Per Yard Net
\$0.10	\$0.15	\$0.15	\$0.20	\$0.03	\$0.08

Prices of Ventilators, see pages 230 to 241 foot note, and page 242 foot note.

H. & C. WROUGHT STEEL REGISTERS

PLAIN LATTICE DESIGN

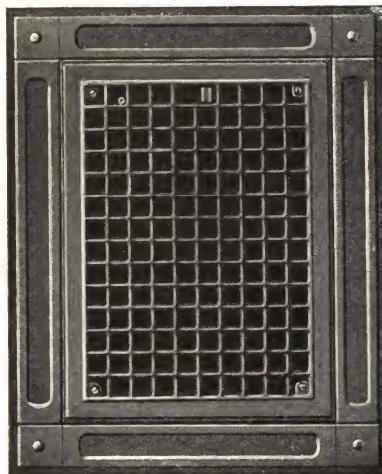


Prices on Registers, Borders and Faces, see
pages 230 to 241.

Prices on Handles, Cord, etc., see page 243.

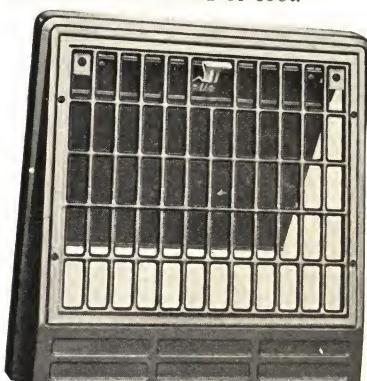
Classes { 200, Floor Register.
275, Floor Border.

Borders, harmonious in design,
are furnished with registers
when desired.



"H. & C." WROUGHT STEEL REGISTERS**New Sizes. New Designs. Increased Air Space**

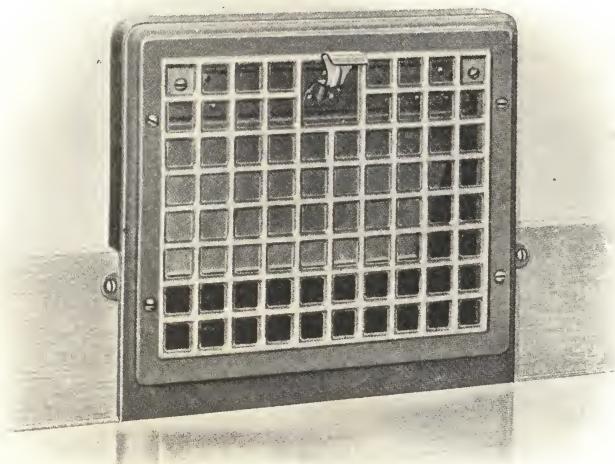
New Side Wall Registers equipped with a new operating device which is easy to work with either hand or foot.



Class No. 100, Design No. 4

List Prices for Class No. 100

Size	For Round Pipe	Black Japan	White Japan	Electro- plated Any Finish
7 x 10	7	\$2.55	\$3.00	\$4.50
7 x 12	8	3.40	3.90	5.50
8 x 13	9	4.25	4.85	6.60
10 x 12	10	5.10	5.85	7.60
10 x 14	12	6.00	6.85	8.50
12 x 14	12	7.15	8.15	12.00

BASEBOARD REGISTER FOR UPPER FLOOR WORK**CLASS NO. 120**

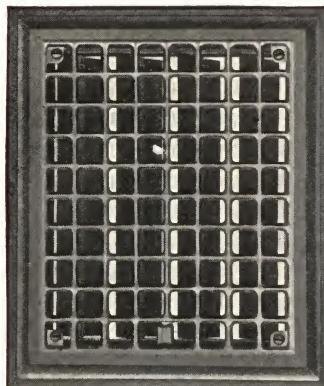
Designed so that register can be installed with or without cutting the baseboard—all steel, unbreakable, positive operating device.

List Prices

Size	Black Japan	White Japan	Electroplated Any Finish
8 x 10	\$2.00	\$2.35	\$3.85
8 x 12	2.40	2.90	4.35
9 x 12	2.50	3.00	4.40
10 x 12	3.75	4.35	6.00

“H. & C.” WROUGHT STEEL REGISTERS CONVEX SIDE WALL REGISTER

For use in shallow flues where a register with multiple valves is desired rather than a single valve register.



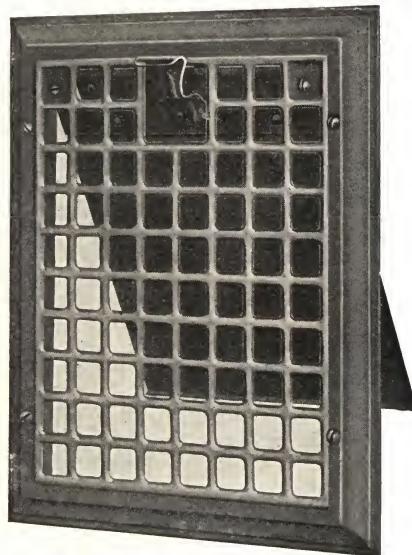
Class No. 220

List Prices

Size	Black Japan	White Japan	Nickel and Bronze Paint	All Electro-plated Finishes except Nickel	Solid Brass or Bronze Metal
8 x 10	\$2.40	\$2.90	\$3.90	\$5.10	\$ 8.50
8 x 12	2.70	3.25	4.45	5.75	10.20
9 x 12	3.00	3.60	4.90	6.60	11.25
10 x 12	3.75	4.50	5.75	7.60	12.50
10 x 14	5.00	6.00	7.10	9.40	15.20



Class No. 340, Horizontal



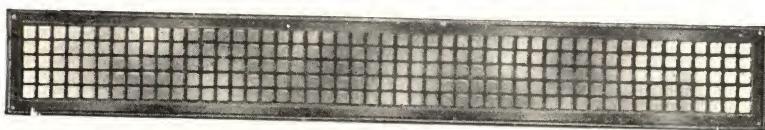
Class No. 350, Vertical

List Prices for Nos. 340 and 350

Size	Black Japan	White Japan	Electro-plated any finish
8 x 10	\$1.65	\$2.00	\$3.15
8 x 12	1.90	2.30	3.65
9 x 12	2.10	2.55	4.00
10 x 12	2.40	2.90	4.40
10 x 14	3.15	3.80	5.25

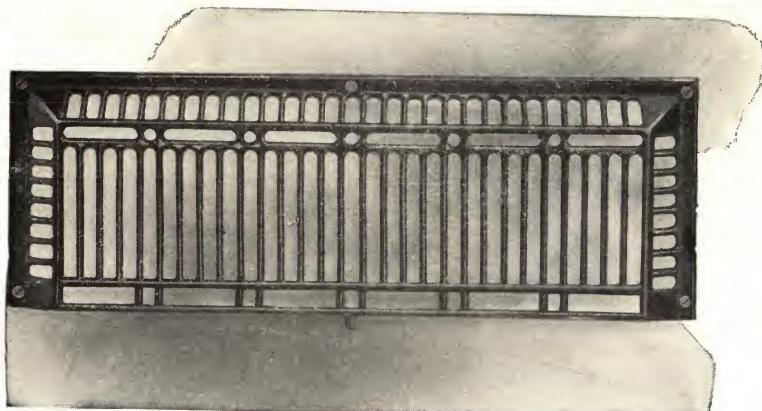
"H. & C." WROUGHT STEEL ONE-PIECE SCREENS

For use in front of steam pipes. Furnished in any length up to 8 feet.



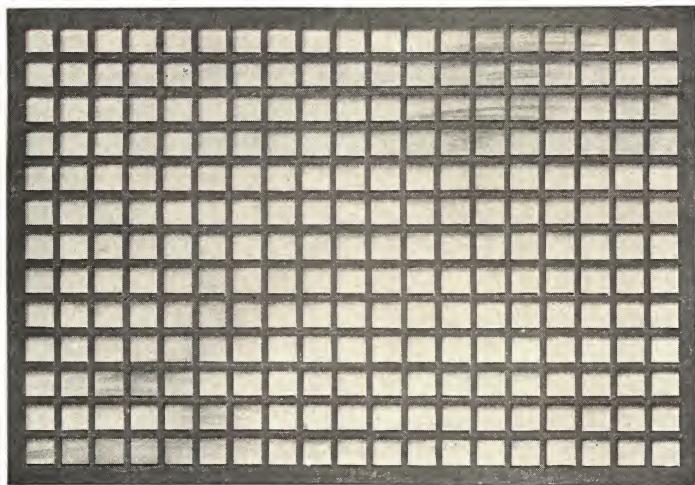
Width of Opening in Inches	Width of Face in Inches	Black Japanned per Foot	White Japanned per Foot	Gold Copper or Bronzed Finish Bronzed per Foot	Nickel, Brass, Bronze or Copper Electroplated per Foot
4	6	\$1.40	\$1.75	\$1.70	\$2.40
5	7	1.50	1.90	1.80	2.50
6	8	1.60	2.00	1.90	2.60
7	9	1.70	2.15	2.10	2.80
8	10	1.80	2.25	2.25	3.00
9	11	1.90	2.40	2.50	3.25
10	12	2.00	2.50	2.75	3.50
11	13	2.25	2.80	3.25	4.00
12	14	2.50	3.15	3.50	4.50

Prices for wider sizes furnished on application.

CONVEX CAST BASEBOARD VENTILATOR PLATES

Size of Opening Inches	Black Japanned	White Japanned	Bronzed in Gold or Copper
5 x 14	\$1.20	\$1.40	\$2.10
5 x 30	3.20	3.90	6.30
6 x 18	1.70	2.00	3.00
6 x 36	3.50	4.20	6.30

A NEW COLD AIR FACE—NOT A REGISTER FACE



Made of Gray Iron Casting

It is as necessary to return the cold air back to the furnace as it is to return the cold water from the radiator back to the boiler. A face having the greatest air opening taking the least floor space is demanded.

HERE IT IS

Compare our price, air capacity and saving of floor space.
Special list price to the trade. Write for Discount.

Size Outside Measure and Square Inches Air Opening	List Price		Air Opening Equal to Size of Old Style Faces	Equal in Capacity of Round Pipe Diameter and Area	Floor Space Saved by New Face in Square Inches
	Black Japan	Plated Copper Brass and Nickel			
12 x 18	\$1.50	\$2.50	12 x 20	12 in.	
15 x 21 183 in.	2.00	3.20	16 x 22 176 in.	15 in. 170 in.	117
15 x 24 210 in.	2.30	4.00	18 x 24 216 in.	16 in. 201 in.	160
18 x 24 258 in.	2.60	4.90	20 x 26 260 in.	18 in. 254 in.	184
18 x 27 295 in.	3.00	5.70	24 x 24 288 in.	20 in. 314 in.	194
18 x 30 328 in.	3.20	6.20	24 x 27 324 in.	20 in. 314 in.	214
20 x 30 385 in.	4.30	7.80	24 x 32 384 in.	22 in. 380 in.	254
24 x 30 445 in.	5.00	9.00	30 x 30 450 in.	24 in. 452 in.	304
27 x 30 505 in.	7.00	10.50	28 x 36 504 in.	26 in. 531 in.	399
30 x 30 564 in.	8.00	13.00	30 x 36 540 in.	26 in. 531 in.	387

No guess about the air opening—being square mesh your rule will tell.

Register faces rated 66½% opening is a deception—none have more—most patterns have less than 50% air opening.

To get maximum air opening and minimum floor space our face is made on a new plan. The bars to give strength without taking up space are narrow but deep. The outside border is narrow, allowing for a $\frac{1}{2}$ -inch lap on the floor with a rib on the underside for strength and to fit in opening of floor. They have greater air capacity, are better and cost less than wood faces.

WOOD REGISTER FACES

FOR COLD AIR DUCTS

Are made of oak strips $\frac{3}{8}$ of an inch thick by $1\frac{1}{4}$ inches in width, into which cross strips $\frac{3}{8}$ of an inch square are glued in grooves made to receive them. The square strips are let into the larger strips in such a manner as to make the top of the face even. The meshes are $1\frac{1}{8}$ inches square.

When in place the top of the face is flush with the floor, wall or ceiling, and when finished to match the other woodwork, a pleasing effect is produced.

Shipped in well made crates, by freight or express as ordered, they are ready for use when received, and are easily fitted to the opening cut in floor, wall or ceiling. Although this illustration shows the face complete with border, the end strips of border will not be nailed on, but will be sent with face and can be nailed in position after face has been cut to exact size required. The opening should not be cut until the face is received, as it is necessary to vary the outside dimensions slightly from sizes named below in order to insure regularity of the meshes. The opening can be made to fit the register face plate, or the face plate can be trimmed to fit the opening, as is most convenient.

These Wood Register Faces are practical in every way and are coming into general use. When placed in a wall the wide strips should be vertical.

They are made in the following sizes, the last named dimensions referring to the wide strips or stringers:

12 x 20.....	\$1.66	22 x 20.....	\$3.05
12 x 22.....	1.83	22 x 22.....	3.36
12 x 24.....	2.00	22 x 24.....	3.67
12 x 26.....	2.17	22 x 26.....	3.98
12 x 28.....	2.33	22 x 28.....	4.29
12 x 30.....	2.50	22 x 30.....	4.60

14 x 20.....	1.94	24 x 20.....	3.33
14 x 22.....	2.13	24 x 22.....	3.67
14 x 24.....	2.33	24 x 24.....	4.00
14 x 26.....	2.52	26 x 26.....	4.33
14 x 28.....	2.71	28 x 28.....	4.66
14 x 30.....	2.92	24 x 30.....	5.00

16 x 20.....	2.22	26 x 20.....	3.61
16 x 22.....	2.44	26 x 22.....	3.98
16 x 24.....	2.67	26 x 24.....	4.33
16 x 26.....	2.90	26 x 26.....	4.69
16 x 28.....	3.12	26 x 28.....	5.05
16 x 30.....	3.34	26 x 30.....	5.42

18 x 20.....	2.50	28 x 20.....	3.88
18 x 22.....	2.75	28 x 22.....	4.29
18 x 24.....	3.00	28 x 24.....	4.66
18 x 26.....	3.25	28 x 26.....	5.05
18 x 28.....	3.50	28 x 28.....	5.42
18 x 30.....	3.75	28 x 20.....	5.84

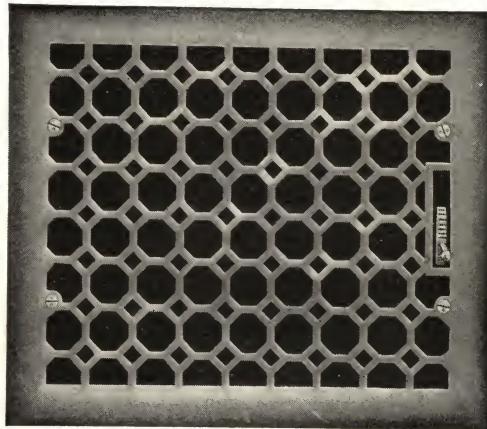
20 x 20.....	2.77	30 x 20.....	4.15
20 x 22.....	3.05	30 x 22.....	4.60
20 x 24.....	3.33	30 x 24.....	5.00
20 x 26.....	3.61	30 x 26.....	5.42
20 x 28.....	3.88	30 x 28.....	5.84
20 x 30.....	4.15	30 x 30.....	6.25



32 x 20.....	\$4.44	34 x 26.....	\$6.13
32 x 22.....	4.88	34 x 28.....	6.60
32 x 24.....	5.34	34 x 30.....	7.07
32 x 26.....	5.80		
32 x 28.....	6.24	36 x 20.....	5.00
32 x 30.....	6.68	36 x 22.....	5.50
36 x 24.....	6.00		
34 x 20.....	4.72	36 x 26.....	6.50
34 x 22.....	5.19	36 x 28.....	7.00
34 x 24.....	5.66	36 x 30.....	7.50

Discount.....per cent.

CONVEX SQUARE



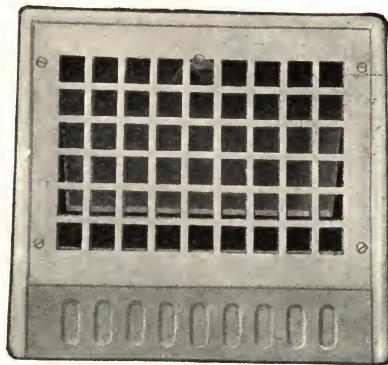
FOR SHALLOW FLUES AND THIN PARTITIONS

Size	Register Lists						Solid Brass or Bronze Metal
	Black Japanned	White Japanned	Electro-plated		Bronzed Finish	White Porcelain Enamel	
			Bronze Brass Copper	Nickel			
6 x 8	\$ 2.20	\$ 2.65	\$ 4.20	\$ 3.45	\$ 3.45	\$ 5.70	\$ 5.80
6 x 10	2.30	2.95	4.45	3.70	3.70	6.65	6.95
6 x 12	2.65	3.20	5.55	4.30	4.30	8.15	8.50
7 x 10	2.35	2.85	5.00	3.85	3.85	7.80	8.10
8 x 8	2.35	2.85	5.00	3.80	3.80	7.80	8.10
8 x 10	2.40	2.90	5.10	3.90	3.90	8.15	8.50
8 x 12	2.70	3.25	5.75	4.45	4.45	9.65	10.20
8 x 15	4.50	5.40	8.60	6.70	6.70	11.90	12.50
9 x 9	2.90	3.50	6.40	4.80	4.80	8.40	8.80
9 x 12	3.00	3.60	6.60	4.90	4.90	10.60	11.25
9 x 14	3.90	4.70	8.10	6.10	6.10	12.20	12.90
10 x 10	3.45	4.15	7.15	5.45	5.45	10.00	10.65
10 x 12	3.75	4.50	7.60	5.75	5.75	11.90	12.50
10 x 14	5.00	6.00	9.40	7.10	7.10	14.35	15.20
10 x 16	7.25	8.70	12.45	9.60	9.60	17.00	18.10
12 x 12	7.10	8.55	12.50	9.45	9.45	17.10	18.20
12 x 14	7.40	8.90	12.80	9.90	9.90	18.35	19.50
12 x 15	7.50	9.00	13.00	10.00	10.00	19.30	20.55
12 x 16	8.75	10.50	15.00	11.40	11.40	21.00	22.50
12 x 17	10.00	12.00	15.70	13.20	13.20	21.80	23.40
12 x 18	11.20	13.25	16.75	14.50	14.50	23.20	24.90
12 x 19	12.50	14.50	18.25	15.90	15.90	24.70	26.75
12 x 20	14.50	16.50	21.90	18.00	18.00	27.80	29.80
12 x 24	17.50	20.00	27.75	22.00	22.00	32.40	34.65
14 x 14	14.00	16.00	20.00	17.50	17.50	22.00	23.90
14 x 16	15.00	17.00	22.10	18.60	18.60	24.00	26.20
14 x 18	16.00	18.25	24.25	20.00	20.00	25.85	27.85
14 x 20	17.00	19.25	25.25	21.25	21.25	26.50	28.50
14 x 22	18.00	20.50	28.00	22.75	22.75	29.00	31.10
16 x 20	20.00	22.50	31.50	25.00	25.00	32.00	34.25
16 x 24	26.00	29.00	38.50	32.00	32.00	38.50	41.00
18 x 21	27.00	30.00	41.00	33.00	33.00	41.00	44.00
18 x 24	30.00	33.00	44.00	36.00	36.00	44.00	48.50
20 x 20	28.50	32.50	43.00	35.50	35.50	43.00	47.00
24 x 24	40.00	46.00	60.00	50.00	50.00	60.00	70.00

THE FERROSTEEL SPECIAL SIDE WALL REGISTER



Cast Iron



Wrought Steel

Can be used in thin partitions, shallow flues or baseboards, enabling you to use a flue three inches deeper than the studding

Complete Price List on Cast Iron

Prices are for Registers only.

Size	For Round Pipe Inches	Capacity of Round Pipe Square Inches	Net Air Opening in Register Face Square Inches	Black Japanned	White Japanned	Bronzed, Gold, Copper or Bronze Finish	Nickel Plated	Electro-plated Bronze, Brass or Copper
7 x 10	7	38	47	\$ 2.55	\$ 3.00	\$ 4.50	\$ 4.50	\$ 4.50
7 x 12	8	48	56	3.40	3.90	5.50	5.50	5.50
8 x 13	9	63	70	4.25	4.85	6.60	6.60	6.60
8 x 15	10	78	80	5.10	5.85	7.60	7.60	7.60
8 x 17	11	95	95	6.75	7.65	10.50	10.50	10.50
10 x 12	10	78	80	5.10	5.85	7.60	7.60	7.60
10 x 13	10	78	86	5.50	6.35	8.00	8.00	8.00
12 x 14	12	113	112	7.15	8.15	12.00	12.00	12.00
12 x 15	12	113	120	7.65	8.65	12.50	12.50	12.50
12 x 18	14	154	144	10.15	11.65	16.50	16.50	16.50

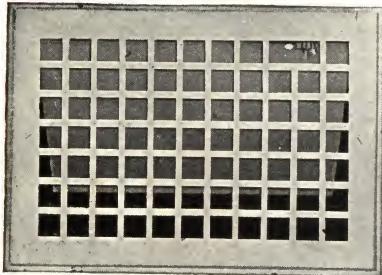
List Prices on Wrought Steel

Subject to Discount.

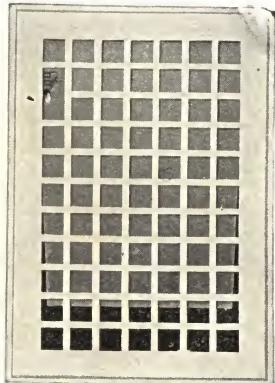
Size	Black Japanned	White Japanned	Plated, All Finishes	Size	Black Japanned	White Japanned	Plated, All Finishes
7 x 10	\$2.55	\$3.00	\$4.50	8 x 13	\$4.25	\$4.85	\$6.60
7 x 12	3.40	3.90	5.50	10 x 12	5.10	5.85	7.60
8 x 10	3.00	3.50	6.00	10 x 13	5.50	6.35	8.00
9 x 12	4.00	4.75	6.50	10 x 14	6.00	6.85	8.50

REVERSIBLE WAFERS

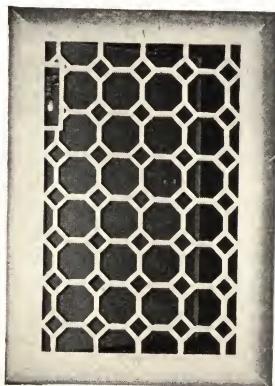
**ANY REGISTER WORKS
BOTH WAYS**



**Plain Lattice All Wrought Steel in
Horizontal Position**

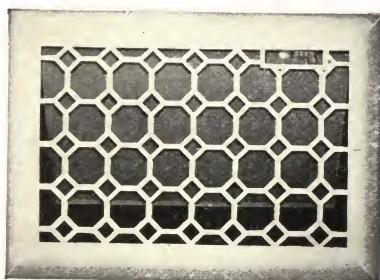


**Plain Lattice All Wrought Steel in
Vertical Position**



**Moorish Cast Face Steel Frame in
Vertical Position**

**ANY REGISTER WORKS
BOTH WAYS**



**Moorish Cast Face Steel Frame in
Horizontal Position**

Price List

Size of Opening	Japanned Black	Japanned White	Bronzed in Gold	Oxidized Copper Plated	Brass, Bronze, Copper or Nickel Plated
8 x 10	\$1.65	\$2.00	\$3.15	\$3.15	\$3.15
8 x 12	1.90	2.30	3.65	3.65	3.65
9 x 12	2.10	2.55	4.00	4.00	4.00
10 x 12	2.40	2.90	4.40	4.40	4.40
10 x 14	3.15	3.80	5.25	5.25	5.25
12 x 14	4.35	5.25	6.85	6.85	6.85
12 x 15	4.50	5.40	7.00	7.00	7.00
14 x 16	8.50	10.20	11.50	11.50	11.50
14 x 18	9.00	10.80	12.00	12.00	12.00

DEFLECTING REGISTERS



Style A



Style C



Style B

Styles A and C for Side Wall.

Style B for Base Board.

Can be used on Double head.

Takes no room in Wall Pipe.

Large open air space.

All that is necessary to fasten them is to remove the face which is fastened by one screw, push the box into the tin frame, and against the wall, draw the straps tight and replace the face.

Styles	Size of Face Opening	Black Ja-panned	White Ja-panned	Bronzed in Gold, Silver or Copper or Plated in Brass, Bronze, Nickel or Copper
Style A and C	8 x 10	\$1.65	\$2.00	\$3.15
	8 x 12	1.90	2.30	3.65
	9 x 12	2.10	2.55	4.00
	10 x 12	2.40	2.90	4.40
Style B	8 x 10	2.00	2.35	3.85
	8 x 12	2.40	2.90	4.35
	8 x 14	3.30	3.80	5.10
	10 x 10	3.10	3.70	5.25
	10 x 12	3.75	4.35	6.00
	10 x 13	3.90	4.50	6.15
	10 x 14	4.00	4.60	6.25
	12 x 14	5.25	5.90	9.00

Discount.....per cent.

THE O-K BASEBOARD REGISTER

First Floor Style

Showing Tin Box with Top Collar.



SIZES AND LIST PRICES OF SPECIAL SIDE WALL REGISTERS

No.	Size	Size Boot	Black Japan'd	White Japan'd	Bronz'd or All Plated Finish's
90	9 x 12	6 x 12	\$2.50	\$3.00	\$4.40
100	10 x 12	6 3/4 x 13 3/4	3.75	4.35	6.00
112	12 x 14	8 x 15	7.15	8.15	12.00

Style No. 10

Takes place of Convex Register.



Upright

LIST PRICE No. 10 UPRIGHT No. 5 HORIZONTAL

Size	Black Japanned	White Japanned	Bronzed or All Plated Finishes
8 x 10	\$1.65	\$2.00	\$3.15
8 x 12	1.90	2.30	3.65
9 x 12	2.10	2.55	4.00
10 x 12	2.40	2.90	4.40

We always ship Upright unless Horizontal are specified.

LIST PRICE OF O-K BOOTS, ELBOWS, ETC.

No.	Size of Pipes	BOOTS Any Style in Catalog Double	REG. BOXES Double	ELBOWS Double	2, 5 or 7 in. Jts. Pipe Double
9	6 x 13	\$1.50	\$1.50	\$1.30	\$0.50
10	6 3/4 x 13 3/4	1.60	1.60	1.40	.50
12	8 x 15	1.75	1.75	1.50	.60
18	7 1/4 x 13	1.60	1.60	1.40	.50
20	9 1/2 x 13 3/4	1.80	1.80	1.60	.60
24	11 3/4 x 15	1.90	1.90	1.70	.70

THE IMPROVED JONES REGISTER WITH DOUBLE METAL BOXES

With ventilating air space between the inner and outer casing. Absolutely fireproof.

PRICE LIST, DIMENSIONS, ETC. With Single Metal Box



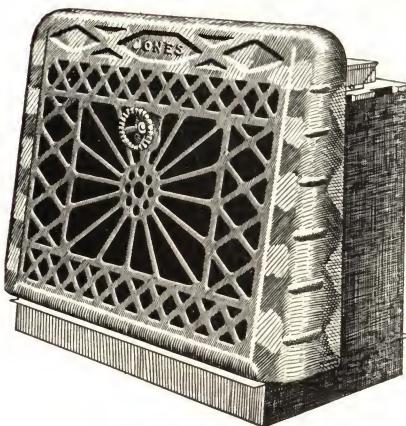
A No. 12 Jones Register

For second floor room, Bottom Collar $3\frac{1}{2}$ x $12\frac{1}{2}$ or 3 x 12 or No. 8 Wall Pipe.

	Number	Second Floor		First Floor		Size of Boot		Cut Floor Opening		Size of Top Collar		List—Black Japanned	List—Electro Plated, Nickel, Copper, Bronze, Oxidized Copper
		Corresponding Size in Com- mon Registers	Size of Warm Air Pipe	No. 7	8x10	9x12	10 " 10x12	10x14	12x15	12x17	11 " 10x12	10x14	10x14	12x15	12x17
	10 S	8x10	No. 7	$3\frac{1}{4}$ x $9\frac{1}{4}$	$3\frac{5}{8}$ x $9\frac{1}{4}$						None	\$3.00	\$4.50
	10½ S	8x12	.....	$3\frac{1}{2}$ x10	$3\frac{3}{4}$ x $10\frac{1}{4}$						None	3.50	5.00
	12 S	9x12	" 8	$3\frac{1}{4}$ x12	$3\frac{5}{8}$ x12						$3\frac{1}{4}$ x $9\frac{1}{4}$	3.50	5.00
	12½ S	9x12	" 10	$3\frac{1}{2}$ x $12\frac{1}{2}$	$3\frac{3}{4}$ x $12\frac{1}{4}$						$3\frac{1}{4}$ x $9\frac{1}{4}$	4.00	5.50
	11 S	8x12	9 in.	$5\frac{1}{8}$ x $9\frac{1}{8}$	$5\frac{3}{8}$ x $10\frac{1}{4}$						None	4.00	5.50
	13 S	10x12	10 "	$5\frac{1}{4}$ x $12\frac{1}{4}$	$5\frac{5}{8}$ x $12\frac{5}{8}$						$3\frac{1}{4}$ x $9\frac{1}{4}$	5.00	6.50
	14 S	10x14	10 "	$5\frac{1}{4}$ x $13\frac{1}{2}$	$5\frac{3}{4}$ x14						$3\frac{1}{4}$ x12	5.50	7.00
	14½ S	10x14	10 "	$6\frac{5}{8}$ x $12\frac{1}{4}$	7 x $12\frac{5}{8}$						$3\frac{1}{2}$ x10	5.50	7.00
	15 S	12x15	12 "	$6\frac{5}{8}$ x $13\frac{1}{2}$	7 x14						$3\frac{1}{2}$ x $12\frac{1}{2}$ or $3\frac{1}{2}$ x $12\frac{1}{2}$	6.00	8.00
	18 S	12x17	14 "	$8\frac{1}{4}$ x $13\frac{1}{2}$	$8\frac{3}{4}$ x14						$3\frac{1}{2}$ x $12\frac{1}{2}$	7.00	9.00

PRICE LIST, DIMENSIONS, ETC., OF JONES REGISTERS With Double Metal Boxes and Steel Fronts

To prevent mistakes order by number.



A No. 15 Jones Register

For first floor rooms. Bottom Collar 7 x 14. These Registers are fitted with a Top Collar which fits $3\frac{1}{2}$ x $12\frac{1}{2}$ or 3 x 12 Wall Pipe, or a plate when used for heating one room on the first floor.

	Number	Second Floor		First Floor		Size of Boot		Cut Floor Opening		Size of Top Collar		List—Black Japanned	List—Electro Plated, Nickel, Copper, Bronze, Oxidized Copper
		Corresponding Size in Com- mon Registers	Size of Warm Air Pipe	No. 7	8x10	9x12	" 8	$\frac{3}{4}$ x $13\frac{1}{2}$ or $3\frac{1}{2}$ x $12\frac{1}{2}$	$3\frac{1}{4}$ x 10 or $3\frac{3}{4}$ x $10\frac{1}{4}$	None	\$3.50	\$5.00	
	10	8x10	No. 7	$3\frac{1}{4}$ x $9\frac{1}{4}$ or $3\frac{1}{2}$ x10	$3\frac{1}{4}$ x10			$3\frac{1}{4}$ x $12\frac{1}{2}$	$3\frac{1}{4}$ x $9\frac{1}{4}$				
	12	9x12	" 8	$\frac{3}{4}$ x 12 or $3\frac{1}{2}$ x $12\frac{1}{2}$	$3\frac{1}{4}$ x $12\frac{1}{2}$			$3\frac{1}{4}$ x $13\frac{1}{2}$	$3\frac{1}{4}$ x $12\frac{1}{2}$				
	412	10x12	" 9	$3\frac{1}{4}$ x $13\frac{1}{2}$	$3\frac{3}{4}$ x $13\frac{1}{4}$			$3\frac{1}{4}$ x $13\frac{1}{4}$	$3\frac{1}{4}$ x12				
	11	8x12	9 in.	$5\frac{1}{8}$ x $9\frac{1}{8}$	$5\frac{5}{8}$ x $10\frac{1}{4}$			$5\frac{5}{8}$ x $10\frac{1}{4}$	None				
	13	10x12	10 "	$5\frac{1}{4}$ x $12\frac{1}{4}$	$5\frac{5}{8}$ x $12\frac{5}{8}$			$5\frac{5}{8}$ x $12\frac{5}{8}$	$3\frac{1}{4}$ x $9\frac{1}{4}$				
	14	10x14	10 "	$5\frac{1}{4}$ x $13\frac{1}{2}$	$5\frac{3}{4}$ x14			$5\frac{3}{4}$ x14	$3\frac{1}{4}$ x12				
	14½	10x14	10 "	$6\frac{5}{8}$ x $12\frac{1}{4}$	7 x $12\frac{5}{8}$			7 x $12\frac{5}{8}$	$3\frac{1}{2}$ x10				
	15	12x15	12 "	$6\frac{5}{8}$ x $13\frac{1}{2}$	7 x14			7 x14	$3\frac{1}{2}$ x 12 or $3\frac{1}{2}$ x $12\frac{1}{2}$				
	18	12x17	14 "	$8\frac{1}{4}$ x $13\frac{1}{2}$	$8\frac{3}{4}$ x14			$8\frac{3}{4}$ x14	$3\frac{1}{2}$ x 12 or $3\frac{1}{2}$ x $12\frac{1}{2}$				

State size of Top Collar wanted for first floor Registers, and size of Bottom Collar wanted for second floor Registers.

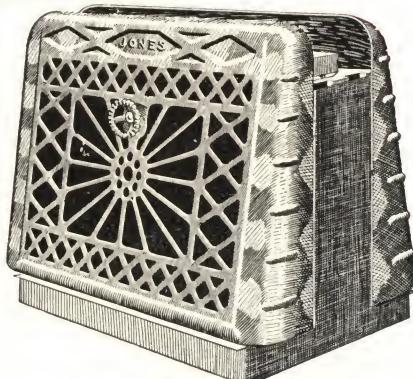
When ordering, state if top plate or top collar is wanted, and if Double Register Box or Single Register Box is wanted. Unless otherwise ordered, will send Double Register Box and Top Plate,

THE JONES REGISTER DOUBLE HEADERS

For heating two rooms on the first floor.



A No. 26 Jones Register



A No. 30 Jones Register

PRICE LIST, DIMENSIONS, ETC., OF DOUBLE-HEADER REGISTERS

The following sizes are double-headers: A register front, ventilator and deflector on each side, have double metal boxes. Double-headers are not made with single boxes.

Number	Corresponding Size in Common Registers	Size of Warm Air Pipe	Size of Boot	Cut Floor Opening	Size of Top Collar	Black Japanned	Electro-Plated, Oxidized Copper or Nickel	
First Floor	20	2—8 x 10	No. 7	$\left\{ \begin{array}{l} 3\frac{1}{4} \times 9\frac{1}{4} \\ \text{or} \\ 3\frac{1}{2} \times 10 \\ 3 \times 12 \end{array} \right.$	3 $\frac{5}{8}$ x 10	None	\$6.50	\$9.00
	24	2—9 x 12	No. 8	$\left\{ \begin{array}{l} 3\frac{1}{2} \times 12\frac{1}{2} \\ \text{or} \\ 3\frac{3}{4} \times 12\frac{3}{4} \end{array} \right.$	3 $\frac{5}{8}$ x 12 $\frac{3}{4}$	3 $\frac{1}{4}$ x 9 $\frac{1}{4}$	7.50	10.00
	426	2—10 x 12	No. 9	3 $\frac{1}{2}$ x 13 $\frac{1}{2}$	3 $\frac{3}{4}$ x 13 $\frac{3}{4}$	3 $\frac{1}{4}$ x 12	8.50	11.50
	26	2—10 x 12	10 in.	6 $\frac{7}{8}$ x 12 $\frac{1}{2}$	7 $\frac{3}{8}$ x 12 $\frac{5}{8}$	3 $\frac{1}{4}$ x 9 $\frac{1}{4}$	9.00	12.00
	28	2—10 x 14	12 in.	7 $\frac{1}{4}$ x 13 $\frac{1}{2}$	7 $\frac{5}{8}$ x 14	3 $\frac{1}{4}$ x 12	10.00	13.00
	29	2—10 x 14	12 in.	10 x 12 $\frac{1}{2}$	10 $\frac{1}{2}$ x 13	3 $\frac{1}{2}$ x 10	10.00	13.00
Second Floor	30	2—12 x 15	14 in.	10 x 13 $\frac{1}{2}$	10 $\frac{1}{2}$ x 14	3 x 12	10.50	13.50
	36	2—12 x 17	16 in.	13 x 13 $\frac{1}{2}$	13 $\frac{1}{2}$ x 14	3 x 12	11.50	15.00

We make Jones registers to order where the partition is wider than regular. For special registers add \$2.00 to list.

We can furnish double-headers with one finish on one side and another finish on the other. If finish is not specified we will use our best judgment in filling orders.

We can furnish top collar any size wanted if not wider than register.

PRICE LIST, FOOT RAILS



Foot Rail

Number	Black Japanned	Electro-Plated Ox. Copper, Copper Bronze and Nickel
Nos. 10, 10 $\frac{1}{2}$, 11.....	\$0.80	\$1.15
Nos. 12, 12 $\frac{1}{2}$, 13, 14 $\frac{1}{2}$.....	.90	1.25
Nos. 14, 15, 18.....	1.00	1.50

MISCELLANEOUS

Handles, list, B. J.....	.....	\$0.20
Handles, list, oxidized copper.....	.....	.30
Operating screws, all sizes list.....	.....	.25
Deflectors, all sizes, list.....	.....	.50
Casing strips, per set, all sizes.....	.....	.50
Cast tops, all sizes.....	.....	.75

THE JONES CONVEX WALL REGISTER WITHOUT BOXES



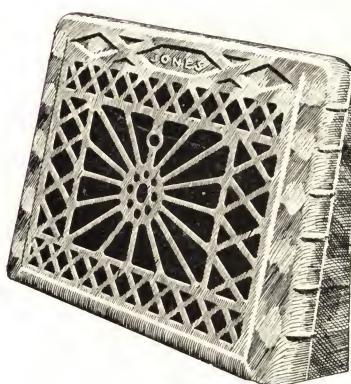
	Sizes	Black Japanned	White Japanned	Electro Plated Nickel, Cop'er, Bronze or Ox. Copper
2nd Floor	8 x 10	\$2.50	\$3.00	\$4.00
	8 x 12	3.00	3.50	5.00
	9 x 12	3.50	4.00	5.50
	10 x 12	4.00	4.50	6.00
	10 x 14	4.50	5.00	6.50
1st Floor	No. 13 or 10 x 12	4.00	4.50	6.00
	No. 14½ or 10 x 14	4.50	5.00	6.50
	No. 15 or 12 x 15	5.00	5.50	7.00

The Jones Convex Wall Register is made with a body, or frame, which fits on the outside of common side wall register box flanges.

All Jones Convex Registers are furnished complete with frames which are drilled and threaded so that front is attached by two bolts where no nuts are required, insuring a perfect fit to the tin box and to the plaster.

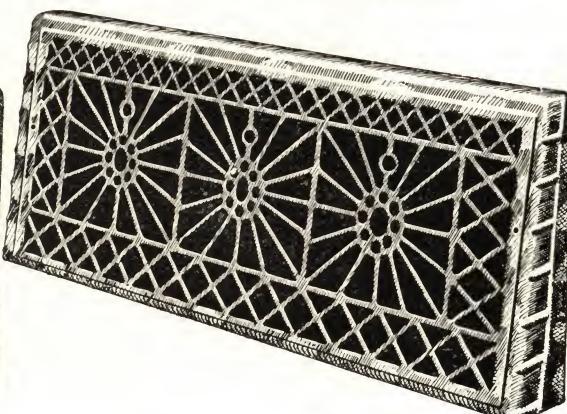
When ordering, state if registers are for first or second floor.

THE NEW JONES SIDEWALL COLD AIR FACE



No. 118

14 in. high by 16 in. long; air opening
113 sq. in.



No. 132

Dimensions: 14 in. high by 32 in. long;
air opening 288 sq. in.

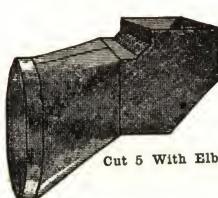
Price List of Cold Air and Circulating Faces to Match Jones Registers

Number	Corresponding Size	List—Black Japanned	List—Electro-plated Oxidized Copper or Nickel
111	8 x 10	\$2.25	\$ 3.00
113	9 x 12	2.50	3.50
114	10 x 14	2.75	4.00
114½	10 x 14	2.75	4.00
115	12 x 15	3.00	4.50
118	14 x 16	4.00	5.50
132	12 x 30	7.00	11.00

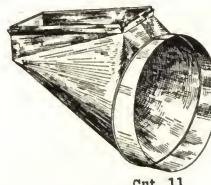
We make Single or Double Boots, Elbows and Angles to fit

JONES SIDE-WALL REGISTERS

and Number Them as Follows:



Cut 5 With Elbow



Cut 11



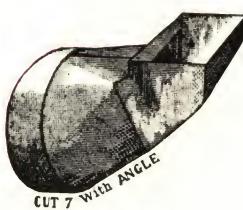
CUT 7 With ANGLE



CUT 7



CUT 5



CUT 7 With ANGLE



Cut 7 With Round Angle



PRICE LIST OF BOOTS, ELBOWS, ANGLES AND EXTENSION JOINTS

No.	BOOTS		ELBOWS		ANGLES		EXTENSION JOINTS 8 INCHES LONG	
	Single	Double	Single	Double	Single	Double	Single	Double
No. 11	\$0.35	\$0.60	\$0.25	\$0.50	\$0.20	\$0.30	\$0.15	\$0.30
No. 13	.40	.70	.30	.60	.23	.35	.18	.35
No. 14	.45	.80	.35	.70	.25	.40	.20	.40
No. 14½	.45	.80	.35	.70	.25	.40	.20	.40
No. 15	.55	.90	.40	.80	.28	.45	.23	.45
No. 18	.60	1.00	.50	.90	.30	.50	.25	.50
No. 26	.55	.90	.40	.80	.28	.45	.23	.45
No. 28-29	.60	1.00	.45	.90	.30	.50	.25	.50
No. 30	.70	1.15	.50	.95	.35	.55	.28	.55
No. 36	.80	1.25	.55	1.00	.40	.60	.30	.60

All cuts are same price excepting 11 and 9, which lists same as Boot and Angle.

If cut is not specified, Cut 5 Single will be sent, as it can be used in almost any place.

When ordering state the cut wanted and the number of Register it is to fit.

We recommend Cut 5 Single, as when it is covered with asbestos is just as safe as Double on account of it having no dead corners for hot air to lodge; and Cut 5 can be used in almost any place with Elbow, Angle, or alone.

PRICE LIST OF BOXES FOR JONES REGISTERS
Or Jones Registers Without Fronts.

All Jones Registers listed are made to be used in ordinary partitions where $3\frac{3}{4}$ inch studding are used.

Single Headers

No.	Single Box	Double Box
10	\$1.50	\$2.00
10½	2.00	2.50
12	2.00	2.50
12½	2.50	3.00
11	2.50	3.50
13	3.00	4.00
14	3.25	4.25
14½	3.25	4.25
15	3.50	4.50
18	3.75	4.75

Double Headers

No.		Double Box
20		\$3.50
21	Double Headers	4.00
24	are not made	4.50
25	with Single Boxes	5.50
26		6.00
28		6.25
29		6.25
30		6.50
36		7.00

When Placing Wall Pipes Without Register Boxes Leave Openings as Follows:

For No. 18 Register, 14 inches wide by 12 inches high.
 For No. 15 Register, 14 inches wide by $12\frac{1}{2}$ inches high.
 For No. 14½ Register, 12½ inches wide by 11 inches high.
 For No. 14 Register, 14 inches wide by $12\frac{1}{2}$ inches high.
 For No. 13 Register, 12½ inches wide by 11 inches high.
 For No. 11 Register, 10¼ inches wide by 11 inches high.
 For No. 12 Register, 12½ inches wide by 11 inches high.
 For No. 10 Register, 10¼ inches wide by 11 inches high.
 No. 36 Register requires opening on each side same as No. 18.
 No. 30 Register requires opening on each side same as No. 15.
 No. 29 Register requires opening on each side same as No. 14½.
 No. 28 Register requires opening on each side same as No. 14.
 No. 26 Register requires opening on each side same as No. 13.
 No. 24 Register requires opening on each side same as No. 12.
 No. 20 Register requires opening on each side same as No. 10.

For Boxes made wide to fit extra wide partitions, add \$2.00 to the List Price.

PRICE LIST OF JONES REGISTERS WITHOUT BOXES

There is included with these Registers, the Front, Operating Screw, Deflector and Side Casing Strips, drilled and threaded, to which the front attaches by means of two bolts, which are also furnished with these registers.

Number	Corresponding Size	List of Black Japanned	List of Electro-plated, Ox. Copper, Nickel, Brass, Etc.
No. 11 for First Floor.....	8 x 12	\$2.75	\$3.75
No. 13 " " "	9 x 12	3.25	4.25
No. 14 " " "	10 x 14	3.75	5.00
No. 14½ " " "	10 x 12	3.75	5.00
No. 15 " " "	12 x 15	4.50	6.00
No. 18 " " "	12 x 17	5.00	6.50

LIST PRICES

For Fronts, Operating Screws and Handles combined.

Number	Black Japanned	White Japanned	Nickel, Ox. Copper Brush or Polished Brass	
No. 10	\$2.70	\$3.25	\$3.50	
No. 12	2.90	3.50	4.00	
No. 11	2.70	3.25	3.50	Add to each size 50c list for Deflectors
No. 13	2.90	3.50	4.00	
No. 14	3.20	3.75	4.50	
No. 14½	3.20	3.75	4.50	
No. 15	3.40	4.00	5.00	
No. 18	4.40	5.25	6.00	

AUER'S NEW PEBBLE DESIGN REGISTER



Single Header, Auer Side Wall Register, Pebble Pattern, with Box Attached

SERIES P-S—REGISTERS WITH SINGLE METAL BOXES

No. for Ordering	For Heater Pipe	Dimensions of Boot	Cut Floor Opening	Size of Top Collar	List Black Finish	Plated Ox. Copper or Nickel	Plated Ox. Brass or Brass	Size of Register
For 2nd Floor	10 P S	No. 7 Wall	3 x 9 $\frac{1}{4}$	4 x 10	None	\$3.00	\$4.50	\$5.00
	12 P S	No. 8 Wall	3 x 12	4 x 13	None	3.50	5.00	5.50
	11 P S	Round 9 in.	6 $\frac{1}{2}$ x 10 $\frac{1}{2}$	6 $\frac{3}{4}$ x 10 $\frac{3}{4}$	None	4.00	5.50	6.00
	13 P S	10 in.	6 $\frac{1}{2}$ x 12 $\frac{1}{2}$	6 $\frac{3}{4}$ x 12 $\frac{3}{4}$	3 $\frac{1}{2}$ x 10	5.00	6.50	7.00
	14 P S	10 in.	6 $\frac{1}{2}$ x 12 $\frac{1}{2}$	6 $\frac{3}{4}$ x 12 $\frac{3}{4}$	3 $\frac{1}{2}$ x 10	5.50	7.00	8.00
	14$\frac{1}{2}$ P S	10 or 12 in.	6 $\frac{1}{2}$ x 13 $\frac{1}{2}$	6 $\frac{3}{4}$ x 14	3 $\frac{1}{2}$ x 12	5.50	7.00	8.00
	15 P S	12 in.	6 $\frac{1}{2}$ x 13 $\frac{1}{2}$	6 $\frac{3}{4}$ x 14	3 $\frac{1}{2}$ x 12	6.00	8.00	9.00
	17 P S	12 in.	6 $\frac{1}{2}$ x 13 $\frac{1}{2}$	6 $\frac{3}{4}$ x 14	None	7.00	9.00	10.00
For 1st Floor	18 P S	14 in.	8 $\frac{1}{2}$ x 13 $\frac{1}{2}$	8 $\frac{3}{4}$ x 14	3 $\frac{1}{2}$ x 12	8.00	10.00	11.00
								10 x 13 Spl

No. 17 P-S is a Special Register for shallow wall where the studding is the 2-inch or flat way. The wall frame is 4 $\frac{1}{2}$ inches deep, therefore provides for box with boot connection 6 $\frac{1}{2}$ x 13 $\frac{1}{2}$ inches.

AUER'S NEW PEBBLE DESIGN REGISTER

SERIES P—REGISTERS WITH DOUBLE METAL BOXES

No. for Ordering	For Heater Pipe	Dimensions of Boot	Cut Floor Opening	Size of Top Collar	List Black Finish	Plated Ox. Copper or Nickel	Plated Ox. Brass or Brass	Size of Register
For 2nd Floor	10 P	No. 7 Wall	3 x 9 $\frac{1}{4}$	4 x 10	None	\$3.50	\$5.00	\$5.50
	12 P	No. 8 Wall	3 x 12	4 x 13	None	4.00	5.50	6.00
For 1st Floor	11 P	Round 9 in.	6 $\frac{1}{2}$ x 10 $\frac{1}{2}$	6 $\frac{3}{4}$ x 10 $\frac{3}{4}$	None	4.50	6.00	6.50
	13 P	10 in.	6 $\frac{1}{2}$ x 12 $\frac{1}{2}$	6 $\frac{3}{4}$ x 12 $\frac{3}{4}$	3 x 9 $\frac{1}{4}$ or 3 $\frac{1}{4}$ x 10	6.00	7.50	8.00
	14 P	10 in.	6 $\frac{1}{2}$ x 12 $\frac{1}{2}$	6 $\frac{3}{4}$ x 12 $\frac{3}{4}$	3 x 9 $\frac{1}{4}$ or 3 $\frac{1}{2}$ x 10	6.50	8.00	9.00
	14$\frac{1}{2}$ P	10 or 12 in.	6 $\frac{1}{2}$ x 13 $\frac{1}{2}$	6 $\frac{3}{4}$ x 14	3 x 12 or 3 $\frac{1}{2}$ x 12	6.50	8.00	9.00
	15 P	12 in.	6 $\frac{1}{2}$ x 13 $\frac{1}{2}$	6 $\frac{3}{4}$ x 14	3 x 12 or 3 $\frac{1}{2}$ x 12	7.00	9.00	10.00
	17 P	12 in.	6 $\frac{1}{2}$ x 13 $\frac{1}{2}$	6 $\frac{3}{4}$ x 14	None	8.00	10.00	11.00
	18 P	14 in.	8 $\frac{1}{2}$ x 13 $\frac{1}{2}$	8 $\frac{3}{4}$ x 14	3 x 12 or 3 $\frac{1}{2}$ x 12	9.00	11.00	12.00

No. 17P is a Special Register for sliding door partitions where the studding is the 2-inch or flat way. The wall frame is 4 $\frac{1}{2}$ inches deep, therefore provides for box with boot connection 6 $\frac{1}{2}$ x 13 $\frac{1}{2}$ inches.

THE SERIES P REGISTERS

Without Boxes. For Single or Double Headers

When ordering the new Auer Pebble Design Registers without boxes it is not necessary to designate whether same are to be used for single or double headers as the grate is now made with corrugated end bar protruding beyond the grate.

When the registers are desired for use as double headers, this corrugated end bar should be broken off at the intersection of the cross bar.

10 x 13 Special will be sent with grate for 4-inch studding unless specified for 2-inch studding.

Number for Ordering	For Heater Pipe	Black Finish	Plated Ox. Copper or Nickel	Plated Ox. Brass or Brass
7 x 10 P	8 or 9 in.	\$3.00	\$4.00	\$4.50
7 x 12 P	9 or 10 in.	4.00	5.00	5.50
10 x 12 P	10 in.	5.00	6.00	7.00
8 x 13 P	10 or 12 in.	5.00	6.00	7.00
10 x 13 P	12 in.	6.00	7.00	8.00
10 x 13 P Special	12 or 14 in.	7.00	8.00	9.00

Order Registers without Boxes by size and series, and always specify finish.

AUER'S NEW PEBBLE DESIGN REGISTER



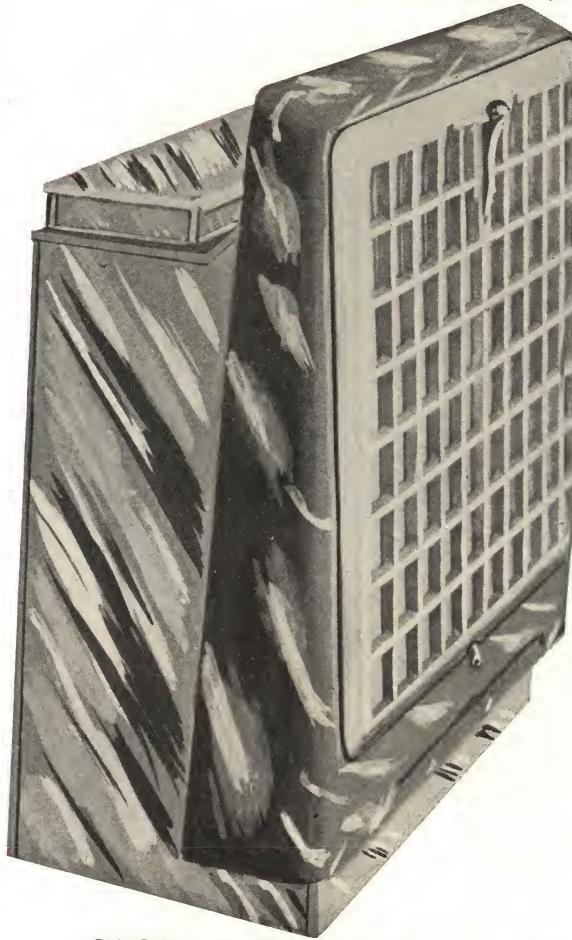
Double Header, Auer Side Wall Register, Pebble Pattern, designed for heating two rooms on the same floor.

SERIES P—DOUBLE HEADERS WITH DOUBLE METAL BOXES
Made Only With Double Metal Boxes

No. for Ordering	For Heater Pipe	Dimensions of Boot	Cut Floor Opening	Size of Top Collar	List Black Finish	Plated Ox. Copper or Nickel	Plated Ox. Brass or Brass	Size of Register
For 2d Floor	20 P	No. 7 Wall	3 x 9 $\frac{1}{4}$	4 x 10	None	\$6.50	\$9.00	\$10.00
	24 P	No. 8 Wall	3 x 12	4 x 13	None	7.50	10.00	11.00
	26 P	Round 10 in.	6 $\frac{1}{2}$ x 12 $\frac{1}{2}$	6 $\frac{3}{4}$ x 12 $\frac{3}{4}$	None	9.00	12.00	13.00
	28 P	10 in.	6 $\frac{1}{2}$ x 12 $\frac{1}{2}$	6 $\frac{3}{4}$ x 12 $\frac{3}{4}$	None	10.00	13.00	15.00
For 1st Floor	29 P	12 in.	8 $\frac{1}{2}$ x 13 $\frac{1}{2}$	9 x 14	3 x 9 $\frac{1}{4}$ or 3 $\frac{1}{2}$ x 10	10.00	13.00	15.00
	30 P	12 or 14 in.	10 x 13 $\frac{1}{2}$	10 $\frac{1}{2}$ x 14	3 x 12 or 3 $\frac{1}{2}$ x 12	10.50	13.50	15.50
	34 P	12 or 14 in.	10 x 13 $\frac{1}{2}$	10 $\frac{1}{2}$ x 14	None	11.50	15.00	17.00
	36 P	16 in.	13 $\frac{1}{2}$ x 13 $\frac{1}{2}$	14 x 14	3 x 12 or 3 $\frac{1}{2}$ x 12	13.00	16.00	18.00

No. 34P is a Special Register for Walls where studding is set 2 inches or flat way.

AUER SIDE WALL REGISTER LATTICE PATTERN



**SINGLE HEADER AUER
SIDE WALL REGISTER,
LATTICE PATTERN,
WITH BOX ATTACHED**

No screws, nails or bolts are required to fasten this register to the wall. The register box is fastened in the wall, the edge of the box is flanged over the edge of the wall border and draws same closely to the wall, holding it snugly and firmly. A single turn catch permits the instant removal of the grill and fan.

The Auer method of fastening allows for different thicknesses of plaster and also prohibits the warm air from passing between the border and plaster, thereby preventing soiled walls.

SERIES L-S—REGISTERS WITH SINGLE METAL BOXES

No. for Ordering		For Heat Pipe	Dimen- sions of Boot	Cut Floor Opening	Top Collar	List Black Japan'd	Plated Ox. Copper or Nickel	Plated Ox. Brass or Brass	Size of Register
For 2d Floor		No. 10 L. S.	No. 7 Wall	3x 9 $\frac{1}{4}$	4x10	None	\$3.00	\$4.50	7x10
		No. 12 L. S.	No. 8 Wall	3x12	4x13	None	3.50	5.00	7x12
For 1st Floor	No. 11 L. S.	Round 9"	6 $\frac{1}{2}$ x10 $\frac{1}{2}$	6 $\frac{3}{4}$ x10 $\frac{3}{4}$	None	4.00	5.50	6.00	7x10
	No. 13 L. S.	10 in.	6 $\frac{1}{2}$ x12 $\frac{1}{2}$	6 $\frac{3}{4}$ x12 $\frac{3}{4}$	3 $\frac{1}{2}$ x10	5.00	6.50	7.00	7x12
	No. 14 L. S.	10 in.	6 $\frac{1}{2}$ x12 $\frac{1}{2}$	6 $\frac{3}{4}$ x12 $\frac{3}{4}$	3 $\frac{1}{2}$ x10	5.50	7.00	8.00	10x12
	No. 14 $\frac{1}{2}$ L. S.	10 or 12"	6 $\frac{1}{2}$ x13 $\frac{1}{2}$	6 $\frac{3}{4}$ x14	3 $\frac{1}{2}$ x12	5.50	7.00	8.00	8x13
	No. 15 L. S.	12 in.	6 $\frac{1}{2}$ x13 $\frac{1}{2}$	6 $\frac{3}{4}$ x14	3 $\frac{1}{2}$ x12	6.00	8.00	9.00	10x13
	No. 17 L. S.	12 in.	6 $\frac{1}{2}$ x13 $\frac{1}{2}$	6 $\frac{3}{4}$ x14	None	7.00	9.00	10.00	10x13
	No. 18 L. S.	14 in.	8 $\frac{1}{2}$ x13 $\frac{1}{2}$	8 $\frac{3}{4}$ x14	3 $\frac{1}{2}$ x12	8.00	10.00	11.00	10x13

No. 17 L-S is a Special Register for shallow wall where the studding is the 2 inch or flat way. The wall frame is $\frac{1}{2}$ inch deep, therefore provides for box with boot connection 6 $\frac{1}{2}$ x13 $\frac{1}{2}$ inches.

AUER NEW LATTICE DESIGN



Double Header—Auer Side Wall Register, Lattice Pattern, Designed for Heating Two Rooms on Same Floor

SERIES L—DOUBLE HEADERS WITH DOUBLE METAL BOXES
Made Only With Double Metal Boxes

No. for Ordering		For Heater Pipe	Dimensions of Boot	Cut Floor Opening	Size of Top Collar	List Black Japanned	Plated Ox. Copper or Nickel	Plated Ox Brass or Brass	Corresponding Capacity Common Registers
2nd Floor	20 L	No. 7 Wall	3 x 9 $\frac{1}{4}$	4 x 10	None	\$6.50	\$9.00	\$10.00	8 x 10—2 reg.
	24 L	No. 8 Wall Round	3 x 12	4 x 13	None	7.50	10.00	11.00	9 x 12—2 reg.
	26 L	10 in.	6 $\frac{1}{2}$ x 12 $\frac{1}{2}$	6 $\frac{3}{4}$ x 12 $\frac{3}{4}$	None	9.00	12.00	13.00	10 x 12—2 reg.
	28 L	10 in.	6 $\frac{1}{2}$ x 12 $\frac{1}{2}$	6 $\frac{3}{4}$ x 12 $\frac{3}{4}$	None	10.00	13.00	15.00	10 x 14—2 reg.
For 1st Floor	29 L	12 in.	8 $\frac{1}{2}$ x 13 $\frac{1}{2}$	9 x 14	3 x 9 $\frac{1}{4}$ or 3 $\frac{1}{2}$ x 10	10.00	13.00	15.00	10 x 14—2 reg.
	30 L	12 or 14 in.	10 x 13 $\frac{1}{2}$	10 $\frac{1}{2}$ x 14	3 $\frac{1}{2}$ x 12	10.50	13.50	15.50	12 x 15—2 reg.
	34 L	12 or 14 in.	10 x 13 $\frac{1}{2}$	10 $\frac{1}{2}$ x 14	None	11.50	15.00	17.00	12 x 15—2 reg.
	36 L	16 in.	13 $\frac{1}{2}$ x 13 $\frac{1}{2}$	14 x 14	3 x 12 or 3 $\frac{1}{2}$ x 12	13.00	16.00	18.00	14 x 18—2 reg.

No. 34 L is a special register for walls where studding is set 2-inch or flat way.

AUER'S NEW LATTICE DESIGN REGISTER
SERIES L—REGISTERS WITH DOUBLE METAL BOXES

No. for Ordering	For Heater Pipe	Dimensions of Boot	Cut Floor Opening	Size of Top Collar	List Black Japan'd	Plated Ox. Cop'r or Nickel	Plated Ox. Brass or Brass	Size of Register
For 2d Floor								
No. 10 L	No. 7 Wall	3x 9 $\frac{1}{4}$	4x10	None	\$3.50	\$5.00	\$5.50	7x10
No. 12 L	No. 8 Wall	3x12	4x13	None	4.00	5.50	6.00	7x12
For 1st Floor								
No. 11 L	Round 9 in.	6 $\frac{1}{2}$ x10 $\frac{1}{2}$	6 $\frac{3}{4}$ x10 $\frac{3}{4}$	None	4.50	6.00	6.50	7x10
No. 13 L	10 in.	6 $\frac{1}{2}$ x12 $\frac{1}{2}$	6 $\frac{3}{4}$ x12 $\frac{3}{4}$	3x9 $\frac{1}{4}$ or 3 $\frac{1}{2}$ x10	6.00	7.50	8.00	7x12
No. 14 L	10 in.	6 $\frac{1}{2}$ x12 $\frac{1}{2}$	6 $\frac{3}{4}$ x12 $\frac{3}{4}$	3x9 $\frac{1}{4}$ or 3 $\frac{1}{2}$ x10	6.50	8.00	9.00	10x12
No. 14 $\frac{1}{2}$ L	10 or 12 in.	6 $\frac{1}{2}$ x13 $\frac{1}{2}$	6 $\frac{3}{4}$ x14	3x12 or 3 $\frac{1}{2}$ x12	6.50	8.00	9.00	8x13
No. 15 L	12 in.	6 $\frac{1}{2}$ x13 $\frac{1}{2}$	6 $\frac{3}{4}$ x14	3 $\frac{1}{2}$ x12 or None	7.00	9.00	10.00	10x13
No. 17 L	12 in.	6 $\frac{1}{2}$ x13 $\frac{1}{2}$	6 $\frac{3}{4}$ x14	3x12 or 3 $\frac{1}{2}$ x12	8.00	10.00	11.00	10x13
No. 18 L	14 in.	8 $\frac{1}{2}$ x13 $\frac{1}{2}$	8 $\frac{3}{4}$ x14	3 $\frac{1}{2}$ x12	9.00	11.00	12.00	10x13 [Spl.]

No. 17 L is a Special Register for sliding door partitions where the studking is the 2 inch or flat way. The wall frame is 4 $\frac{1}{2}$ inches deep, therefore provides for box with boot connection 6 $\frac{1}{2}$ x13 $\frac{1}{2}$ inches.

THE SERIES L REGISTERS
Without Boxes, for Single or Double Headers

Number for Ordering	For Heater Pipe Inches	Black Japanned	Plated Ox. Copper or Nickel	Plated Ox. Brass or Brass
7 x 10 L	8 or 9	\$3.00	\$4.00	\$4.50
7 x 12 L	9 or 10	4.00	5.00	5.50
10 x 12 L	10	5.00	6.00	7.00
8 x 13 L	10 or 12	5.00	6.00	7.00
10 x 13 L	12	6.00	7.00	8.00
10 x 13 L Special	12 or 14	7.00	8.00	9.00

Order register without boxes by size and series, and always specify finish.

REGISTER BOXES FOR PEBBLE AND LATTICE PATTERN REGISTERS



Fig. D



Fig. G. EXTENSION JOINT

8 inches Long. Single and Double Tin.



Fig. E

Fig. D and Fig. E Boots are the same price. Made Single and Double.

No. for Ordering	To Fit Register Box No.	Size of Collar	List Single Tin	List Double Tin
11	11	9 in.	\$1.25	\$2.00
14	{ 13 14 26 28 14½ }	9 & 10 in.	1.50	2.25
15	{ 15 17 18 }	10 & 12 in.	1.75	2.50
18	{ 29 30 }	12 & 14 in.	2.00	3.00
30	{ 34 35 }	12 & 14 in.	2.50	3.50
*36	36	14 & 16 in.	3.00	4.00

*No. 36 is made in Fig. D only.

Order by No. and Figure and give size of Collar.



Fig. I

This shows combination of Boot Fig. E and Angle Fig. H, making an off-set boot. For cost add price of Angle to price of Boot.



Fig. F

Boot Fig. F is an exclusive Auer product, made by no other register or price concern. It is a very practical fitting where registers are over sills, girders or walls. It combines a boot and elbow in one. Made single and double tin.

Fig. F Boot. Made in Single and Double Tin.

No. for Ordering	To Fit Register Box No.	Size of Collar	List Single Tin	List Double Tin
11	11	9 in.	\$2.00	\$3.00
14	{ 13 14 26 28 14½ }	9 & 10 in.	2.25	3.50
15	{ 15 17 18 }	10 & 12 in.	2.75	4.00
18	{ 29 30 }	12 & 14 in.	3.25	4.50
30	{ 34 35 }	12 & 14 in.	3.75	5.00

Always state whether Single or Double Tin is wanted, and always give size of collar for Boots.

REGISTER BOXES FOR PEBBLE AND LATTICE PATTERN REGISTERS

**Fig. A**

Fig. A, Reg. Box. For 2nd floor, to fit wall pipe. Made double tin with air space. Also single tin.

No. for Ordering	Size of Register	To Fit Wall Pipe	List Single Tin	List Double Tin
10	7 x 10	No. 7 or 3½ x 10	\$0.90	\$1.50
12	7 x 12	No. 8 or 3½ x 12	1.00	1.75

Order by No. and Fig. Specify whether double or single tin.

All Register Boxes are made for 3¾ in. studding.

**Fig. B**

Fig. B. For first floor. Double tin and single tin. All top collars have removable caps so that wall pipe may or may not be connected.

No. for Ordering	Size of Register	Size of Boot	Size of Collars	List Single Tin	List Double Tin
11	7 x 10	6½ x 10½	None	\$1.00	\$1.75
13	7 x 12	6½ x 12½	3 9/16	1.25	2.00
14	10 x 12	6½ x 12½	3 9/16	1.50	2.25
14½	8 x 13	6½ x 13½	3 x 12	1.50	2.25
15	10 x 13	6½ x 13½	3 x 12	1.75	2.50
17	10x13Spl.	6½ x 13½	None	1.75	2.50
18	10x13Spl.	8½ x 13½	3 x 12	2.50	3.50

**Fig. C**

Fig. C, Reg. Box. Double headers for two registers. Made double tin only.

No. for Order'g	Size of Register	Size of Boot	Size of Top Collar	List Price
20	7 x 10	No. 7 W. P.	None	\$1.75
24	7 x 12	No. 8 W. P.	None	2.00
26	7 x 12	6½ x 12½	None	2.25
28	10 x 12	6½ x 12½	None	2.25
29	8 x 13	8½ x 13½	3 x 9½	2.50
30	10 x 13	10 x 13½	3 x 12	2.75
34	10x13Spl.	10 x 13½	None	2.75
36	10x13Spl.	13½ x 13½	3 x 12	3.50

All top collars have removable caps.

**Fig. H**

Fig. H. Angle 45 degrees. Single or Double tin.

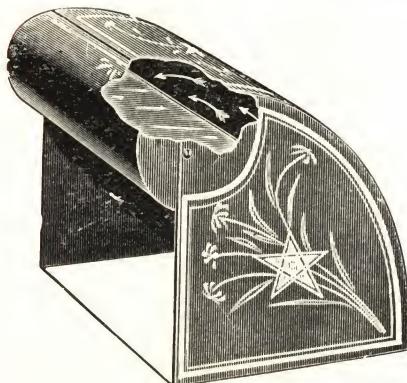
No. for Ordering	To Fit Boot	List Single Tin	List Double Tin
No. 11	No. 11	\$0.75	\$1.00
No. 14	No. 14	.90	1.25
No. 15	No. 15	1.10	1.50
No. 18	No. 18	1.25	1.75
No. 30	No. 30	1.40	2.00

This shows combination of Boot Fig. E and Angle Fig. H, making an offset boot. For cost add price of Angle to price of Boot.

THE STAR DEFLECTOR

FOR FLOOR REGISTER

The Star Deflector moistens the atmosphere and protects the walls, ceilings and decorations from soot and dust, therefore overcomes the only objection to using hot air furnaces.



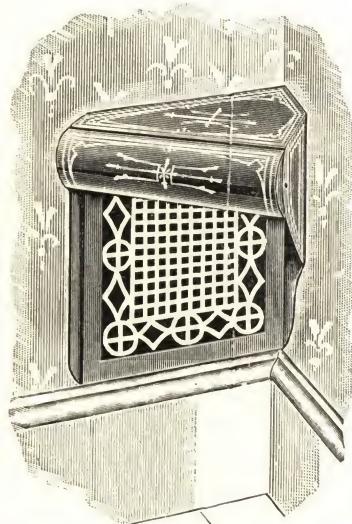
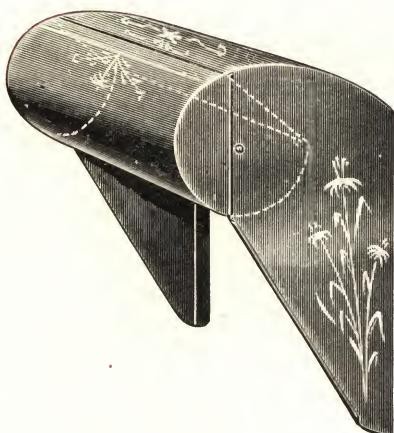
Japanned and Decorated

	Height	Depth	Width	List Price
No. 4	12½	11	14	\$1.50
No. 5	15	12	16	1.75
No. 6	15	12	18	2.00

Polished Brass

	Height	Depth	Width	List Price
No. 4	12½	11	14	\$4.00
No. 5	15	12	16	5.00
No. 6	15	12	18	6.00

FOR WALL REGISTERS



This cut shows the deflector placed in position, and is designed to fit in the corner of the wall. It conducts the heat to the center of the room without soiling the wall paper.

Japanned and Decorated

	Width	List Price
0	10	\$1.00
1	11	1.15
2	12	1.30
3	14	1.45

Polished Brass

	Width	List Price
0	10	\$3.25
1	11	3.50
2	12	3.75
3	14	4.00

Japanned and Decorated

	Width	List Price
7	10	\$1.50
8	11	1.65
9	12	1.80
10	14	1.95

Polished Brass

	Width	List Price
7	10	\$3.75
8	11	4.00
9	12	4.25
10	14	4.50

Section 6

Manufactured Articles

Wash Boilers

Garbage Cans

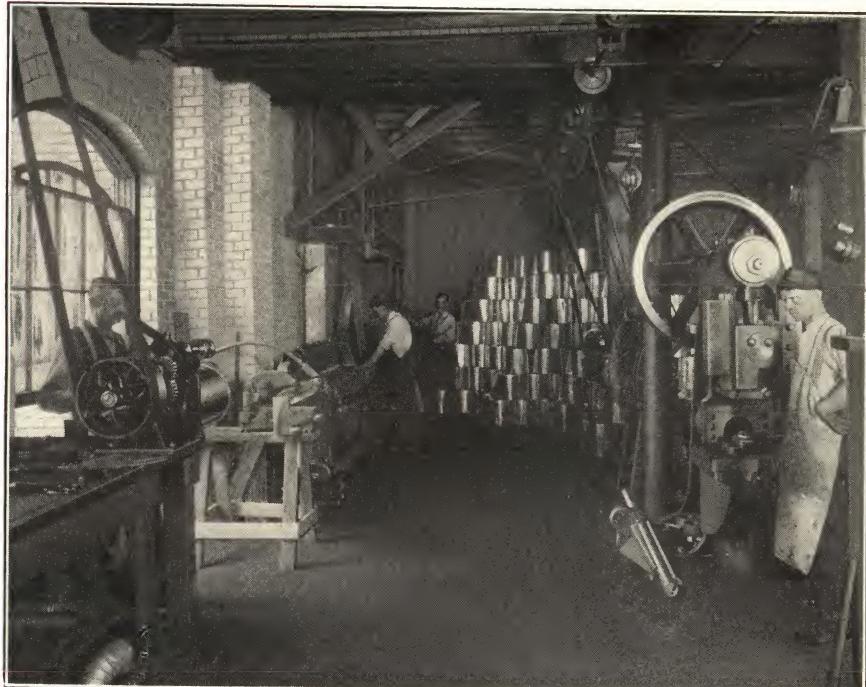
Ash Cans

Stove Pipe

Elbows and Trimmings

Syrup Supplies

Fruit Cans, Etc.



A Section of our Wash Boiler Department

We use the best grade of Tinplate in the manufacture of our Wash Boilers, each boiler is tested and GUARANTEED against leakage.

We employ the best of labor in all departments and our aim is to produce articles of quality and merit.

BOILERS**STAMPED COVER****IC Best Coke Tin**

Drop Iron Handles

Nos.	70	80
Per dozen.....\$.....		

**12 OZ. COPPER BOTTOM****IC Best Coke Tin**Oval Boiler. Stamped Cover
Drop Iron Handles

Nos.	802	902
Per dozen.....\$.....		



BOILERS**OVAL BOILER****IX Best Coke Tin**

Pieced Cover
Drop Iron Handles
Nos. 88 . 99
Per dozen.....\$.....

**OVAL BOILER****IX Best Coke Tin 12 oz. Copper****Bottom**

Pieced Cover
Drop Iron Handles
Nos. 882 992
Per dozen.....\$.....

**GALVANIZED****Stamped Tin Covers**

Drop Iron Handles
Nos. 8 9
Per dozen.....\$.....

BOILERS

OVAL BOILER**IXX Best Coke Tin**

Pieced Cover

Drop Iron Handles

Nos.	281	291
Per dozen.....\$.....		

**OVAL BOILER****IXX Best Coke Tin**

Pieced Cover

Stationary Wood Handles

Nos.	2815	2915
Per dozen.....\$.....		

**OVAL BOILER****IX Charcoal Bright Tin**

Pieced Cover

Stationary Wood Handles

Nos.	185	195
Per dozen.....\$.....		

BOILERS

**OVAL BOILER****IXX Charcoal Bright Tin**

Pieced Cover
Stationary Wood Handles
Nos. 285 295
Per dozen.....\$.....

**OVAL BOILER****IXXX Charcoal Bright Tin**

Pieced Cover
Stationary Wood Handles
Nos. 385 395
Per dozen.....\$.....

**SQUARE BOILER****IX Charcoal Bright Tin**

Pieced Cover
Stationary Wood Handles
Nos. 1845 1945
Per dozen.....\$.....

BOILERS

SQUARE BOILER

IXX Charcoal Bright Tin

Pieced Cover

Stationary Wood Handles

Nos.	2845	2945
Per dozen.....\$.....		



OVAL BOILER

All Copper, 12 oz.

Pieced Cover

Drop Iron Handles

Nos.	128	129
Per dozen.....\$.....		



OVAL BOILER

All Copper, 12 oz.

Pieced Cover

Stationary Wood Handles

Nos.	1285	1295
Per dozen.....\$.....		

BOILERS

**OVAL BOILER****All Copper, 14 oz.**

Pieced Cover
Drop Iron Handles
Nos. 148 149
Per dozen.....\$.....

**OVAL BOILER****All Copper, 14 oz.**

Pieced Cover
Stationary Wood Handles
Nos. 1485 1495
Per dozen.....\$.....

**SQUARE BOILER****All Copper, 14 oz.**

Pieced Cover
Stationary Wood Handles
Nos. 14085 14095 14105
Per dozen.....\$.....

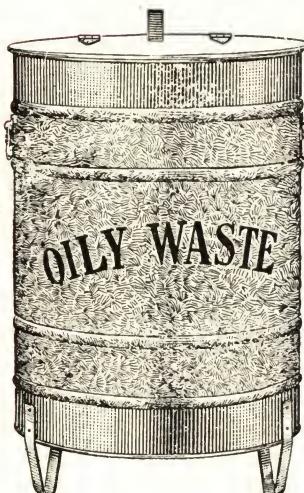
GARBAGE CANS



Our cans are made in two grades, "STANDARD" 28 gauge galvanized and "HEAVY" 26 gauge galvanized. Bottoms double seamed and thoroughly soldered inside.

	Height, In.	Diam., In.	Standard	Heavy
No. 00	11	11	Price, per doz.....	\$.....
No. 02	13	12½	Price, per doz.....	\$.....
No. 03	14¼	13½	Price, per doz.....	\$.....
No. 04	17¼	14½	Price, per doz.....	\$.....

OILY WASTE CANS WITH SELF-CLOSING COVER

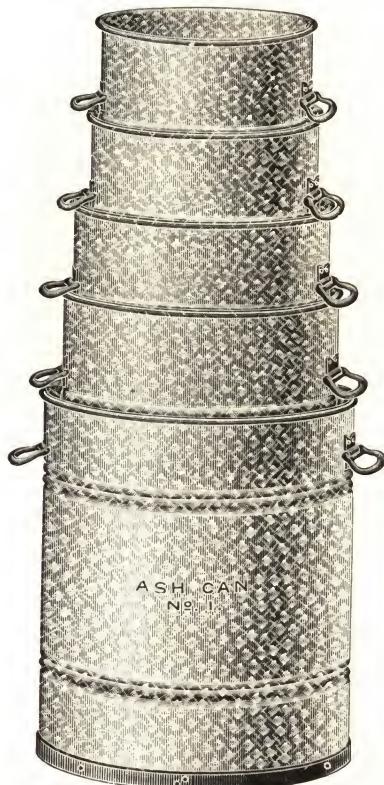


Made of 26 gauge galvanized iron.
Self-closing top. Heavy galvanized strap iron feet.

Price

No. 1	Size 12 x 15 inches, each.....	\$.....
No. 2	Size 12 x 18 inches, each.....	\$.....
No. 3	Size 15 x 20 inches, each.....	\$.....

Packed one-quarter dozen in a crate unless otherwise specified.

GALVANIZED ASH CANS

We make all our ash cans from 26 gauge galvanized steel. The top is wired with $\frac{1}{4}$ -inch rod. The bottom is double seamed and protected by a heavy band riveted to the can. Guard drop handles are used on the sides.

No.	Size	Each	Per Doz.
1	20 x 26	\$....	\$....
2	18 x 26	....	....
3	17 x 26	....	....
4	16 x 26	....	....
5	15 x 26	....	....
6	14 x 19	....	....

OSBORN'S CARRYING CANS

Made of IXXX Charcoal Bright Tin.

No.	4	6	8
Per dozen	\$....	\$....	\$....

CREAM CITY RAILROAD MILK CANS

Seamless Bell Covers.

Round Handles.

Standard St. Louis Pattern.

Nos.	205	208	210
Gallons	5	8	10
Inches	10½ x 19½	13 x 20¾	13 x 24
Av. wt., each, lbs..	13	16	17½
Each	\$....	\$....	\$....

Double tinned after being made up.

Welded bevel edge breast hoops.

Tinned bottom hoops, flush with can body, our own special corrugated design.

Holes for cover links in necks and covers—specially reinforced.



CREAM CITY RAILROAD MILK CANS

Seamless Closed Bottom Covers.

Round Handles.

Standard Iowa Pattern.

Nos.	105	108	110
Gallons	5	8	10
Inches	10½ x 19½	13 x 20¾	13 x 24
Av. wt., each, lbs..	12½	15½	17
Each	\$....	\$....	\$....

Double tinned after being made up.

Welded bevel edge breast hoops.

Tinned bottom hoops, flush with can body, our own special corrugated design.

Holes for cover links in necks and covers—specially reinforced.



ELGIN RAILROAD MILK CANS



Seamless Bell Covers.

Round Handles.

Extra Heavy St. Louis Pattern.

Nos.	1805	1808	1810
Gallons	5	8	10
Inches	10½ x 19½	13 x 20¾	13 x 24
Av. wt., each, lbs.....	18½	22	24
Each .....	\$....	....	....

Double tinned after being made up.

Welded half oval, extra heavy breast hoops.

Tinned bottom hoops, flush with can body, our special extra heavy design.

Holes for cover links in necks and covers—specially reinforced.

JERSEY RAILROAD MILK CANS

Seamless Bell Covers.

Round Handles As Illustrated	Malleable Iron Handles
---------------------------------	---------------------------

Nos.	82	102	824	1024
Gallons	8	10	8	10
Inches	13 x 20¾	13 x 24	13 x 20¾	13 x 24
Av. wt., each, lbs..	20	22	20¾	22¾
Each .....	\$....	....	....	....

Double tinned after being made up.

Welded half oval breast hoops.

Hoopless bottoms.

Holes for cover links in necks and covers—specially reinforced.



SYRUP MEN'S SUPPLIES



CARRYING PAILS

	Heavy Galv. Iron	IXX Charcoal Tin
Quarts	18 20	18 20
Per dozen .....	\$.....	.....

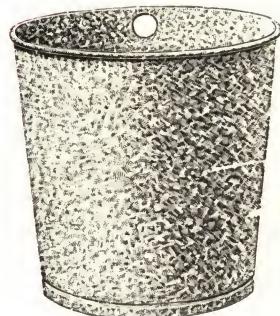
LINES' SAP PAIL COVER



This cover has been on the market for a number of years, and on account of its great simplicity, and the ease with which it can be attached to the bucket, it is a very ready seller and popular with a great many owners of large sugar bushes.

Lines' sap pail cover, tin, per 100.....\$.....
Lines' sap pail cover, galvanized, per 100.....\$.....

SYRUP MEN'S SUPPLIES

**SAP PAILS****Galvanized**

Quarts	10	12	15
Per 100	\$.....		

**SAP PAILS****IC Bright**

Quarts	10	12	15
Per 100	\$.....		

**SAP PAILS****IX Bright**

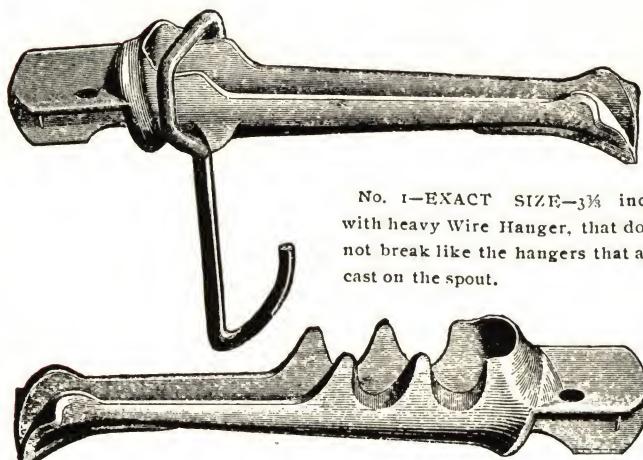
Quarts	10	12	15
Per 100	\$.....		

IMPROVED ANCHOR SAP SPOUTS



Packed 100 in a box; 1000 in a case.

Per 1000 \$.....



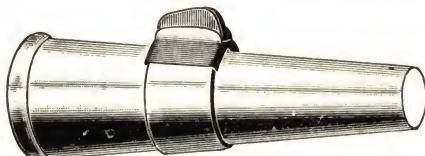
No. 1—EXACT SIZE— $3\frac{1}{8}$ inch
with heavy Wire Hanger, that does
not break like the hangers that are
cast on the spout.

POST'S IMPROVED EUREKA SAP SPOUTS

	Per 100
No. 1	$3\frac{1}{8}$ in.. \$1.60
No. 1	$2\frac{3}{4}$ in.. 1.45
No. 2	$3\frac{1}{8}$ in.. 1.30
No. 2	$2\frac{3}{4}$ in.. 1.15

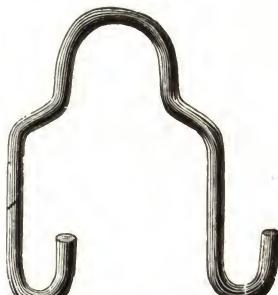
No. 2 exact size, $3\frac{1}{8}$ inches, arranged with two deep notches to hang buckets
having large rings, or to be used with No. 2 ear.

THE "CONNEAUT" SAP SPOUT



This spout has all the advantages and none of the disadvantages of other sheet metal sap spouts. It can be driven so firmly into the tree, without breaking, that you can swing one hundred pounds weight on it all winter and it will not loosen; still you can quickly remove it by the use of a strong peg. It can be easily cleaned and kept sweet, and it will not clog up the sap, causing it to sour, as the closed-end spouts will do.

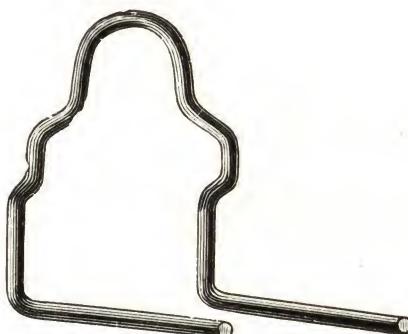
Price, per 1000 \$.....; per 100 \$.....

SAP PAIL LOOPS**FOR TIN BUCKETS****Cut Full Size**

These loops come close around on three sides of the spout and the wind can not dislodge the bucket; as it fits so close to the sides of the spout the bucket cannot sway, to do any harm in the wind. For those who wish the loop to put into pails on hand or those manufactured by tinners, we leave the ends open, as shown in cut, so the ends may be hammered down after being put into the pail.

Put up 100 in a box, and 500 or 1000 in a case.

Price per 1000..... \$.....

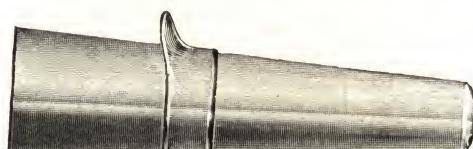
**Cut Full Size****FOR WOODEN BUCKETS**

Many sugar makers are still using wooden buckets, and wish to fix them so they can be hung on a spout. To accommodate this trade a loop for wooden pails, as shown in cut, is made.

Make two small holes through the wood near the top of the bucket and put the straight ends of the loop through from the inside, and bend over the ends with a hammer on the outside.

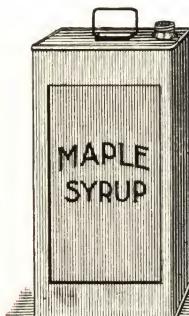
Put up 100 in a box, and 500 or 1000 in a case.

Price per 1000..... \$.....

NEW IMPROVED RECORD SAP SPOUT

Packed 100 in a box; 1000 in a case.

Per 1000\$.....



SYRUP CANS

SQUARE OR OBLONG WITH 1½-INCH LINED SCREW

$\frac{1}{4}$ gallon, square, per 100.....	\$.....
$\frac{1}{2}$ gallon, square, per 100.....	
1 gallon, square, per 100.....	
5 gallon, square, per 100.....	
$\frac{1}{4}$ gallon, oblong, per 100.....	
$\frac{1}{2}$ gallon, oblong, per 100.....	
1 gallon, oblong, per 100.....	
5 gallon, oblong, per 100.....	

SYRUP CANS

PLAIN ROUND WITH 1¼-INCH LINED SCREW

$\frac{1}{4}$ gallon, per 100.....	\$.....
$\frac{1}{2}$ gallon, per 100.....	
1 gallon, per 100.....	



JACKET SYRUP CANS

PITCH TOP

Nos.	108	109	110
Gallons	1	2	3
Per dozen	\$.....		
Nos.	111	112	
Gallons	5	10	
Per dozen	\$.....		

FRUIT CANS

Quarts	1
Per gross	\$.....

One gross in a case.



MADE UP STOVE PIPE



COMMON IRON

Inches	3	4	5	6	7
Per 100 Joints.....	\$....	\$....	\$....	\$....	\$....

WOODS' REFINED IRON

Inches	3	4	5	6	7
Per 100 Joints.....	\$....	\$....	\$....	\$....	\$....

EUREKA BLUE STEEL

Inches	3	4	5	6	7
Per 100 Joints.....	\$....	\$....	\$....	\$....	\$....

POLISHED STEEL

Inches	3	4	5	6	7
Per 100 Joints.....	\$....	\$....	\$....	\$....	\$....

PLANISHED IRON

Inches	3	4	5	6	7
Per 100 Joints.....	\$....	\$....	\$....	\$....	\$....

Riveted Pipe, all grades, \$0.50 per 100 Joints, extra.

$\frac{3}{4}$ Joints Pipe, \$0.01 advance over $\frac{3}{4}$ price of full Joint.

$\frac{1}{2}$ Joints Pipe, .01 advance over $\frac{1}{2}$ price of full Joint.

$\frac{1}{4}$ Joints Pipe, .01 advance over $\frac{1}{4}$ price of full Joint.

Taper Joints in quantities of 1 dozen of a size, \$0.02 per Joint over price of large end; less quantities, \$0.03 per Joint.

KNOCK DOWN STOVE PIPE



COMMON IRON

Inches	3	4	5	6	7
Per 100.....	\$....	\$....	\$....	\$....	\$....

EUREKA BLUE STEEL

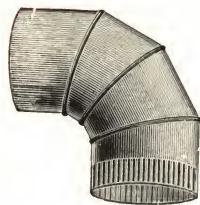
Inches	3	4	5	6	7
Per 100.....	\$....	\$....	\$....	\$....	\$....

WELLSVILLE POLISHED STEEL

Inches	3	4	5	6	7
Per 100.....	\$....	\$....	\$....	\$....	\$....

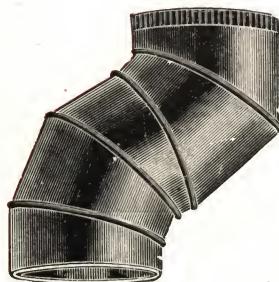
25 Joints in a crate.

FOUR-PIECE ELBOWS



	STANDARD COMMON					
Inches	3	4	5	6	7	
Per dozen.....\$.....
EUREKA BLUE STEEL						
Inches	3	4	5	6	7	
Per dozen.....\$.....
POLISHED STEEL						
Inches	3	4	5	6	7	
Per dozen.....\$.....
PLANISHED IRON						
Inches	3	4	5	6	7	
Per dozen.....\$.....

ADJUSTABLE ELBOWS



	EUREKA BLUE STEEL					
Inches	3	4	5	6	7	
Per dozen.....\$.....
POLISHED STEEL						
Inches	3	4	5	6	7	
Per dozen.....\$.....
PLANISHED IRON						
Inches	3	4	5	6	7	
Per dozen.....\$.....

ONE-PIECE ELBOWS



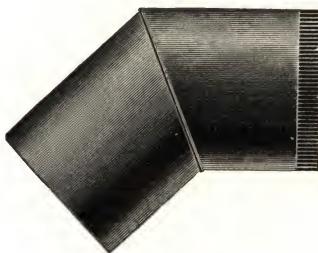
	COMMON					
Inches	3	4	5	6	7	8
List	\$1.00	1.20	1.40	1.55	2.25	4.00
REFINED						
Inches	3	4	5	6	7	8
List	\$1.15	1.50	1.75	2.10	2.85	4.50
POLISHED						
Inches	3	4	5	6	7	8
List	\$1.50	1.90	2.40	3.10	4.00	5.75
PLANISHED						
Inches	3	4	5	6	7	8
List	\$2.50	3.30	4.25	5.35	7.00	8.00

Discount.....per cent.

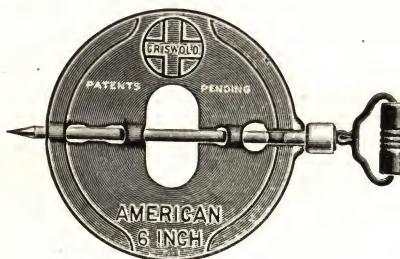
ANGLE ELBOWS**GOLDEN STAR—EXTRA LONG ENDS**

Made from 27 Gauge Woods Refined Iron.

Inches	5	6	7
Per dozen .....	\$.....	.....	.....

**EUREKA BLUE** $22\frac{1}{2}^\circ$ and 45°

Inches	3	4	5	6	7
Per dozen .....	\$.....	.....	.....	.....	.....

AMERICAN STOVE PIPE DAMPERS

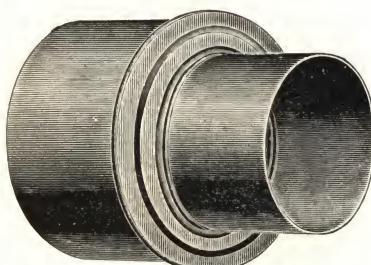
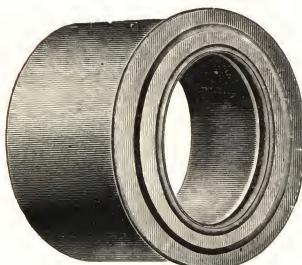
Enameled Wood Handle, held at each end by small wire. Guaranteed will never burn or become loose.

Price List

Inches	3	4	5	$5\frac{1}{2}$	6
Per dozen	\$1.15	1.25	1.35	1.45	1.50
Inches	$6\frac{1}{2}$	7	8	9	10
Per dozen	\$1.75	2.00	2.75	3.75	5.00

Discount.....per cent.

NEW IDEAL STOVE PIPE REDUCER



Our 1910 Model we claim to be without exception the best Stove Pipe Reducer on the market, and with our large plant equipped especially for this class of work, coupled with our extraordinary opportunities for the purchase of raw material, we are in position to make the Ideal Stove Pipe Reducer, not only much better but at a much lower cost than heretofore offered.

The 1910 Outside and Inside Reducer has a Molded Face of artistic design which will match up with any style of wall collar in a pleasing manner.

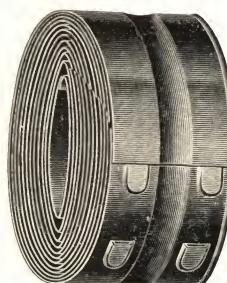
Permits the use of a 7-inch in connection with a 6-inch hole or a 6-inch pipe with a 7-inch hole.

All sizes in stock.

Price per dozen \$2.00

When ordering, always state size and style wanted.

ADJUSTABLE STOVE PIPE THIMBLES



Come in knock-down form; put up 12 in a package. Same thimble can be used for either 6 or 7-inch hole.

Saves buying the two sizes.

They are proving very popular with the trade on account of the minimum space occupied in stock.

Price per dozen \$.....
Price per gross \$.....



ROYAL FLUE STOP

BRASS FINISH

Common Flat Spring

Inches	8 $\frac{1}{4}$
Per dozen	

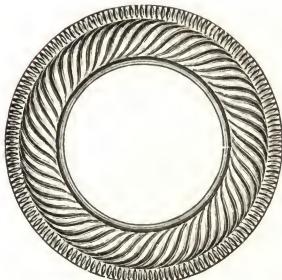
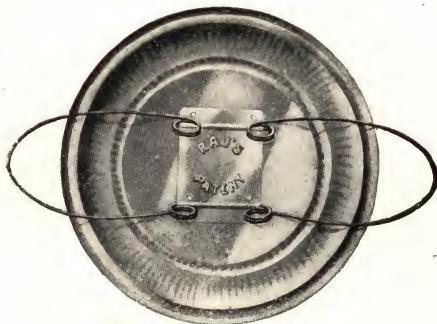
RAU'S FLUE STOPPER

Made in two sizes. No. 1 will fit a smooth or irregular hole from 4 to 8 inches, while the No. 3 is for extra large openings.

The cover will not bend from the strain of the springs, thereby will not allow the dirt to fall out.

Packed one dozen in a box.

No.	Price Per Gross	Per Doz.
1 Rau's	\$.....	\$.....
3 Rau's	\$.....	\$.....

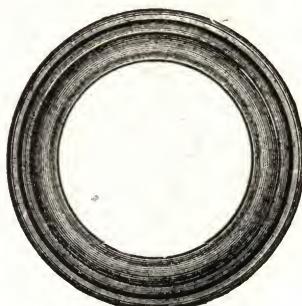


LACQUERED PIPE COLLARS

No.	Size Opening	Extreme Width	Price Per Gross	Price Per Doz.
37	3	10 $\frac{1}{4}$	\$.....	\$.....
36	3	9 $\frac{1}{8}$	\$.....	\$.....
35	3	8 $\frac{1}{4}$	\$.....	\$.....
47	4	10 $\frac{1}{4}$	\$.....	\$.....
46	4	9 $\frac{1}{8}$	\$.....	\$.....
56	5	9 $\frac{1}{8}$	\$.....	\$.....
55	5	8 $\frac{1}{4}$	\$.....	\$.....
6	6	9 $\frac{1}{8}$	\$.....	\$.....
7	7	10 $\frac{1}{8}$	\$.....	\$.....

PLAIN TIN PIPE COLLARS

No.	Size Opening	Extreme Width	Price Per Gross	Price Per Doz.
35P	3	8 $\frac{1}{4}$	\$.....	\$.....
36P	3	9 $\frac{1}{8}$	\$.....	\$.....
46P	4	9 $\frac{1}{8}$	\$.....	\$.....
5P	5	8 $\frac{1}{4}$	\$.....	\$.....
6P	6	9 $\frac{1}{8}$	\$.....	\$.....
7P	7	10 $\frac{1}{8}$	\$.....	\$.....



**"THE ECLIPSE" CORRUGATED SCREW ADJUSTABLE
STOVE PIPE THIMBLES**



The "Eclipse" Corrugated Stove Pipe Thimble consists of two parts so constructed that they can be easily adjusted to fit any size floor or wall.

The ends are made from the best of steel, handsomely enameled.

The body is made from heavy, bright tin with corrugation of screw formations, which not only give great strength, but make the thimble easily adjusted to any thickness of wall or floor desired.

Neatly packed in substantial crates, one-half dozen to crate.

**"THE STANDARD" SPRING ADJUSTABLE
STOVE PIPE THIMBLES**

These Thimbles are made from the best of material, with either cast iron or steel ends, black enameled, and are put up in the best possible manner. Packed one-half dozen to crate.

"Standard" Spring, Adjustable, with steel ends, weight the same as corrugated; with cast ends, add six pounds to each crate.

Cast ends made in 5, 6, 7 and 8-inch sizes only.

Cast Heads



Steel Heads

		Dozen	Weight to Crate
3	-in. for walls, 4 to 7½ in.	\$ 9.00	7 lbs.
3	-in. for floors, 6 to 12 in.	10.00	9 lbs.
4	-in. for walls, 4 to 7½ in.	9.00	7 lbs.
4	-in. for floors, 6 to 12 in.	10.00	9 lbs.
5	-in. for walls, 4 to 8 in.	10.00	10 lbs.
5	-in. for floors, 6 to 12 in.	11.00	11 lbs.
5½	-in. for walls, 4 to 8 in.	10.50	10 lbs.
5½	-in. for floors, 6 to 12 in.	11.50	11 lbs.
6	-in. for walls, 4 to 8 in.	11.00	10 lbs.
6	-in. for floors, 6 to 12 in.	12.00	12 lbs.
7	-in. for walls, 4 to 8 in.	13.00	12 lbs.
7	-in. for floors, 6 to 12 in.	14.00	14 lbs.
*8	-in. for walls, 4 to 8 in.	16.00	18 lbs.
*8	-in. for floors, 6 to 12 in.	17.00	20 lbs.

*Cast ends only.

Discount.....per cent.

STOVE BLACKING



LIQUID BLACKENE STOVE POLISH

No. 5	Per gross	\$.....
No. 10	Per gross	\$.....
	No. 5 packed 1 dozen in a case.	
	No. 10 packed 3 dozen in a case	

BLACKENE

The Modern Benzine Paste
For Dealers and Domestic Use

Per can	\$.....
5-pound cans	



PEERLESS IRON ENAMEL

For General Use

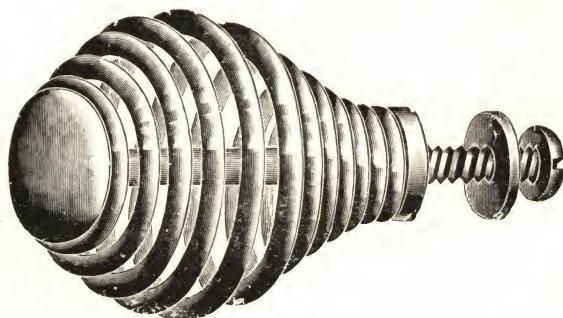
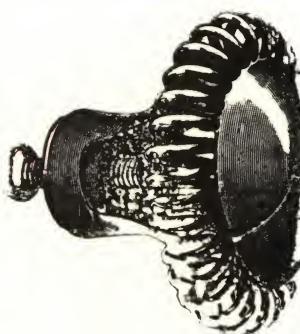
Per gross	\$.....
Ten-ounce cans with brush.	
Packed 1, 2 and 3 dozen in a case.	

BLACK JACK PASTE
For Domestic Use

Per dozen	\$.....
Three-quarter-pound cans.	
Packed 3 dozen in a case.	

ALASKA STOVE KNOBS**ROUND FACE**

No.	Length	Width	Price Per 100
290	1 3/4 in.	1 1/2 in.	\$3.33
291	1 7/8 in.	1 5/8 in.	3.69
292	2 in.	1 3/4 in.	4.44
293	2 3/4 in.	2 1/4 in.	5.93

Discount.....per cent.

Nos.	100	101	102	103
Inches	1 1/4 x 7/8	1 1/2 x 1	1 3/4 x 1 1/4	2 1/4 x 1 1/2
Per 100, nickel-plated.....	\$2.40	\$2.40	\$2.66	\$3.66

*Discount.....per cent.***EAGLE ASBESTOS STOVE CLAY****A Real Up-to-Date, Live, Wide-Awake Brand****SAVE TIME AND EXPENSE**

Easiest one to sell. A dry plastic, durable fireproof mixture for making and repairing linings in coal stoves, furnaces and ranges. Put up in most attractive, square paste-board boxes, with full directions in different languages on each.

Prices, Per Dozen

Size 10	\$4.20
Size 6	3.00
Size 3	1.80
In bulk, per lb. . . . .	.03

Discount.....per cent.

REPAIRING
STOVE LININGS.
—
Do it yourself.
—
Easy to apply.
—
Clean, durable.
—
Fits any stove.
—
SOLD BY
STOVE & HARDWARE
DEALERS.
—
ALSO PLUMBERS
EVERYWHERE.

Section 7

Tools for Sheet Metal Work

Tinners' Hand Tools	Hand Groovers
Folders	Beaders
Brakes	Hand Snips
Forming Rolls	Foot Shears
Bench Machines	Elbow Shears
Lever Punches, Etc.	
Power Machines	Power Presses
Power Shears	Power Punches
Power Circle Shears	Power Groovers
Power Rolls	Power Seamers
Power Folders, Etc.	

We carry in Stock a full line of Light Tinners' Tools and can make prompt shipment from factory of Heavy Tools, Presses, etc. We are always glad to figure on special machinery and equipment. We have our own Die and Press department and are in position to make special dies promptly and at reasonable prices. We shall be glad to estimate on special sheet metal stampings, etc.

TINNERS' TOOLS CIRCUMFERENCE RULE



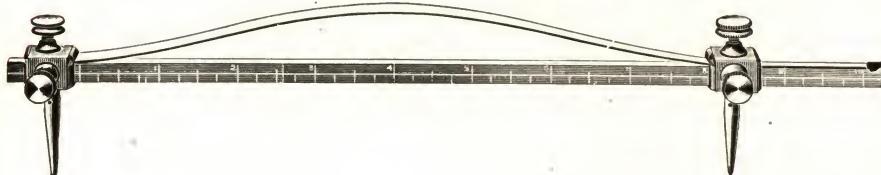
The Circumference Rule is a very useful tool for obtaining circumferences of circles by simply measuring the diameters. As shown in cut the top edge is graduated with 16ths of inches. The bottom edge with what, for convenience, is called "circumference inches," into 8ths. The divisions of this edge, compared with the opposite edge, bear the same ratio inversely to each other as the diameter of a circle to its circumference. Therefore, opposite the first inch on top edge is read on the lower edge 3 and the fraction representing 0.1416 inches. Its use will readily be appreciated by tinners and other sheet metal workers, for whom it is particularly adapted.

Liquid Measure—Flaring, $\frac{1}{4}$ pint to 5 gallons.

Dry Measure—Flaring, $\frac{1}{4}$ bu. to 2 bu. Cans—Flat Top, 1 gal. to 200 gals.
Cans—Pitched Top, 1 gal. to 10 gals. Dry Measure—Straight, 1 qt. to 3 bu.

	List	Net	List	Net
3 ft. Plain.....each, \$2.50	\$.....		Nickel plated.....each, \$3.00	\$.....
4 ft. Plain.....each, 3.00		Nickel plated.....each, 3.50	.....
<i>Discount.....</i>			<i>per cent.</i>	

THE MAGIC PATTERN RULE



One-sixth actual size

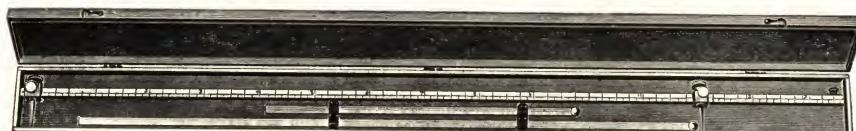
Patented January 14, 1890

The Greatest Labor-saving Tool Ever Invented in the Interest of Tinners and Sheet Metal Workers

The Magic Pattern Rule consists of a nickel-plated steel bar 4 ft. long, $\frac{7}{16}$ ths square, marked in circumference inches on the front and in inches and 8ths on the back, and two slides with set screws into which trammel points are fastened.

It is put up in a neat wooden box and is provided with three steel ribbons of different gauges, which may be used according to size of elbow wanted. It is accompanied by chart 19 x 23 in. in size, mounted on linen and very durable, and contains, besides the elbow diagram, also rules for cutting all kinds of flaring, oval, cylindrical, cone-shaped vessels, etc., with the aid of the Magic. Besides all this the Magic can be used for a straight edge rule, circumference rule and trammel.

Magic rule and chart complete, in hinged wood case.....each, net, \$.....
Magic chart only.....each, net,



The Magic Rule in Its Case

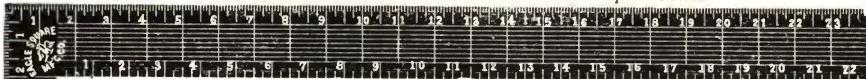
STRAIGHT EDGES

This Straight Edge is made of special hard and smooth high carbon steel. The edges are finished absolutely true.

Price List

6 ft. 4 in. x 2 in.....	each, \$3.00	Per dozen, \$30.00
8 ft. 6 in. x 2½ in.....	each, 4.00	Per dozen, 40.00
10 ft. 6 in. x 3 in.....	each, 5.00	Per dozen, 50.00
12 ft. 6 in. x 3 in.....	each, 6.00	Per dozen, 60.00

Discount.....per cent.



TINNERS' SQUARES

No. 3

Super-Superextra, 2 inches wide, 16ths, 12ths, 8ths, 4ths, Board and Brace Measure, per dozen..... \$24.00

No. 10

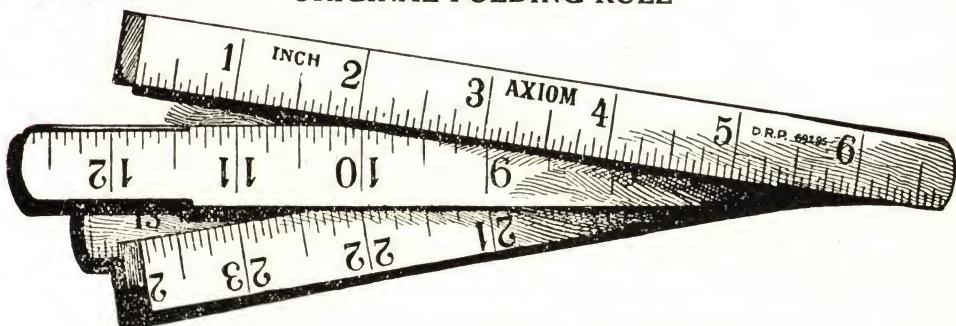
12 x 1½-inch body, 8 x 1-inch tongue, divided in 12ths, 8ths, 4ths, per dozen

\$20.00

Discount.....per cent.



ORIGINAL FOLDING RULE



**Our Best Make. Inches Both Sides. Riveted Brass Tips.
Concealed Spring Joints.**

Feet	1	2	3	4	5	6	8
No. 1021 Yellow, per dozen.....	\$1.40	\$2.00	\$3.00	\$4.00	\$5.00	\$6.00	\$8.00
No. 1031 White, per dozen.....	1.80	2.80	4.20	5.60	7.00	8.40	11.20

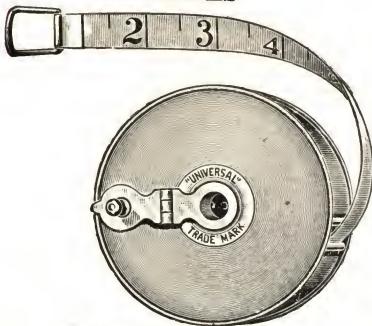
Discount.....per cent.

"RELIABLE" STEEL MEASURING TAPES

With double folding flush handle, opened by pressing small pin or button on opposite side. Hard leather cases. Nickel plated trimmings. Measurements guaranteed perfectly accurate.

WITH $\frac{3}{8}$ -INCH TAPES

Marked Feet and 12ths (Inches and Eighths)	Length	Diameter of Case	Each
No. 200	25	2 $\frac{3}{4}$	\$ 4.50
No. 203	50	3 $\frac{3}{4}$	7.20
No. 205	75	4 $\frac{1}{4}$	10.40
No. 206	100	4 $\frac{1}{2}$	12.80

**"UNIVERSAL" MEASURING
TAPES****EXTRA GRADE
PATENT LEATHER CASE**

With one-half inch linen cored tape. Brass folding handles, brass rings, clips and trimmings.

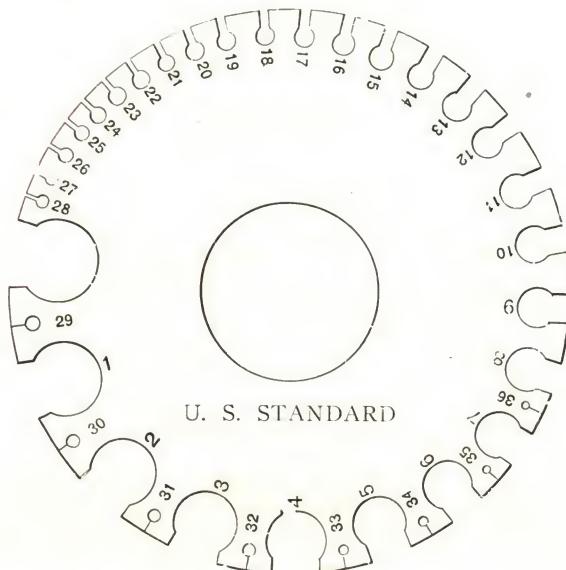
	Length Feet	Price Per Dozen
No. 830	25	\$ 6.50
No. 833	50	10.00
No. 835	75	13.00
No. 836	100	15.00

**"STERLING" LINEN
MEASURING TAPES**

With nine-sixteenths inch pure linen tape, reinforced with leather the first four inches and heavily coated. Nickel plated trimmings, flush handle, hard leather cases.

	Length Feet	Price Per Dozen
No. 400	25	\$15.00
No. 403	50	20.00
No. 405	75	25.00
No. 406	100	30.00

WIRE GAUGES



	List	Net
No. 1 Wire gauge, cast steel, round, Nos. 0 to 36, per dozen.....	\$24.00	\$.....
No. 2 Wire gauge, cast steel, round, Nos. 0 to 36, per dozen.....	15.00	\$.....
Discount.....	<i>per cent.</i>	

TINNERS' SHAVE HOOK



No. 318

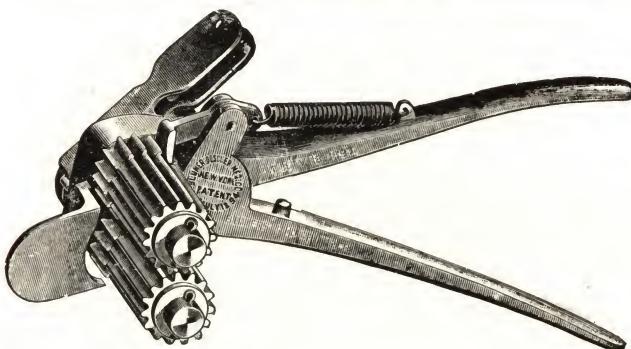
No. 318	Shave hook, cast steel, oval blade, polished black handle.....	\$.....
No. 318½	Shave hook, cast steel, triangular blade, polished, black handle.....	\$.....

TRAMMEL POINTS

Bronze Metal, Steel Points.

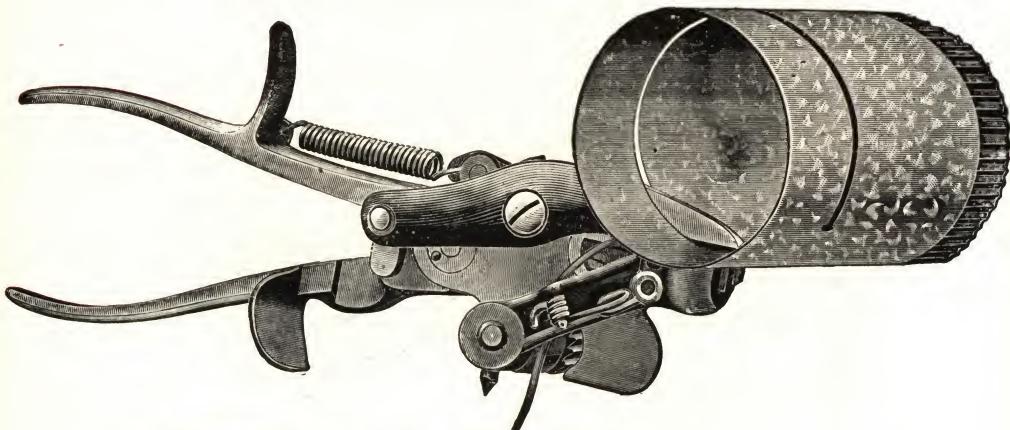
No. 1 Small, per pair, list.....	\$1.00
No. 2 Medium, per pair, list.....	1.25
No. 3 Large, per pair, list.....	1.75

Discount.....*per cent.*

BLUMER'S HAND CRIMPING MACHINE

All parts made of the best steel casting.
Crimps 1 inch long and any depth required.

Price each, \$.....

BLUMER'S COMBINATION PIPE FITTER

For crimping and cutting all kinds of sheet metal pipe.
Durable and simple in construction.
A necessity for putting up stove, leader and heater pipe.

ADVANTAGES OF THE COMBINATION PIPE FITTER

The Combination Pipe Fitter is really three tools in one, being a slitting shear, shear and a crimper.

It is indispensable in sheet metal pipe work of all descriptions.
It may be closed and carried in pocket.

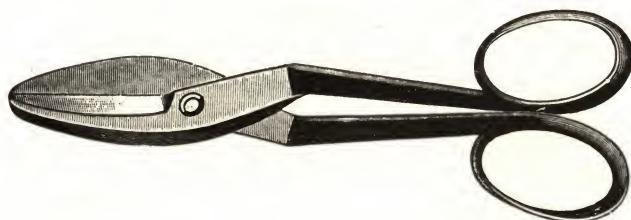
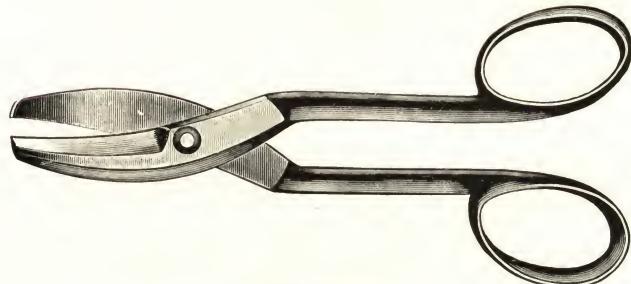
The working parts are all of the best steel and any part may be duplicated. The tool is warranted in every respect. The crimps are 1 inch long, and may be used to the full depth or any less required. The tool will crimp as thick as No. 24 gauge and cut as heavy as No. 18 gauge.

For making elbows in leader or conductor work the pipe can be cut, without loss of material to any desired angle.

Price each, \$.....

NIAGARA SNIPS OR HAND SHEARS—FORGED

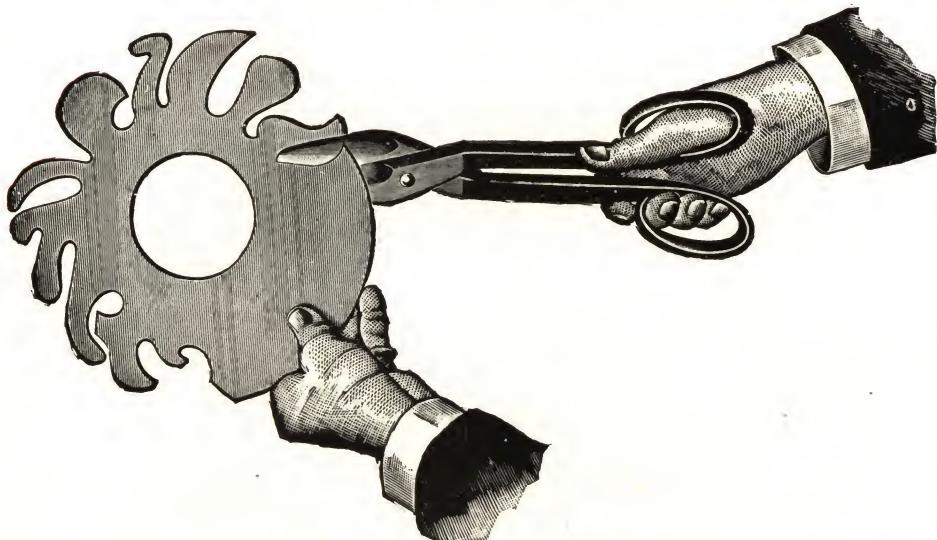
(Warranted)

**STRAIGHT****CIRCULAR**

These Snips are drop-forged of refined iron, and the jaws are laid with high grade cast steel, properly hardened. The finish is strictly first class.

Nos.	6½	7	8	9	10
Net weight, ounces.....	48	41	32	23	16
Inches	4½	4	3½	3	2½
Niagara Straight Snips, per pair.....	\$3.00	2.50	2.00	1.50	1.40
Niagara Circular Snips, per pair.....	4.25	3.50	3.00	2.50	2.25

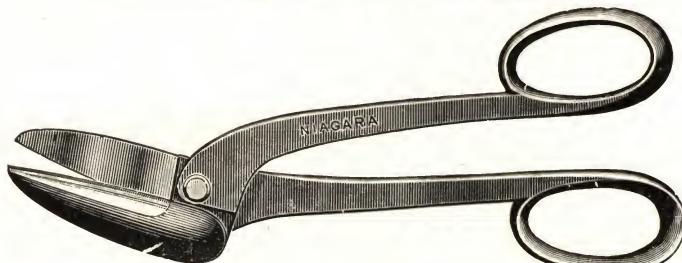
We make the Niagara Straight Snips in three styles. Left Hand Snips, the ordinary kind, have the handles shaped for the right hand, and they cut at the left side of the upper jaw. These are shown above, and will be sent unless otherwise ordered. Right Hand Snips also have the handles shaped for the right hand, but they cut at the right side of the upper jaw, like bench shears. Snips for left-handed workmen have the handles shaped for the left hand and the jaws for right-hand cut. For Niagara Straight Snips for left-handed workmen we make an extra charge of 50 cents net per pair. Circle Snips for left-handed men \$1.00 net per pair extra.

BUFFALO SNIPS—FOR CURVES AND STRAIGHT CUTS

These Snips will cut curves, scrolls and irregular shapes, besides being adapted to the same class of work as the ordinary straight snips. The jaws are *not* bent, like those of circular snips. They are shaped in a peculiar manner to allow the material to pass freely when cutting curves, or changing the direction of the cut. The Buffalo Snips are drop-forged of steel and laid with best cast steel, properly hardened.

	Net Weight	Price
No. 17, Buffalo Snips, 4-in.....	41 ozs.	\$2.50
No. 18, " " 3½-in.....	32 ozs.	2.00
No. 19, " " 3-in.....	26 ozs.	1.50

Buffalo Circle Snips, with bent jaws, can be furnished at \$1.00 extra to list price.

NIAGARA HAND SLITTING SHEARS

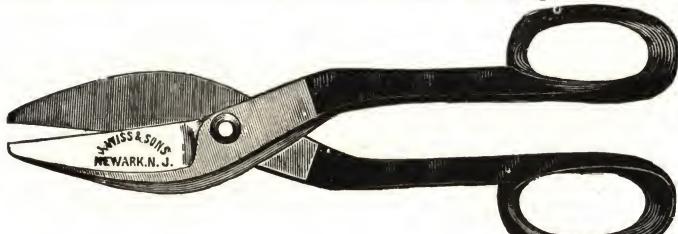
These Shears are distinguished from ordinary tinners' shears through the peculiar shape and arrangement of the jaws and handles. The lower jaw is relieved to allow the material to slide backwards freely. Both of the handles remain above the work while cutting. A sheet of any length can be cut apart without trouble and injury to the hands of the operator.

These Shears are especially adapted to cutting corrugated sheets lengthwise, which cannot be done with ordinary snips. They are forged of solid steel, and the jaws are laid with best cast steel, carefully tempered. Total length 13½ inches.

Niagara Hand Slitting Shears, 3-inch cut, net weight 40 ozs., price.....\$3.00

WISS STRAIGHT AND CIRCLE SNIPS—FORGED

The Wiss Snip is similar to the Niagara Straight Snip. But preferred by many, as the jaws can be opened to obtain a full cut without straining the hand.

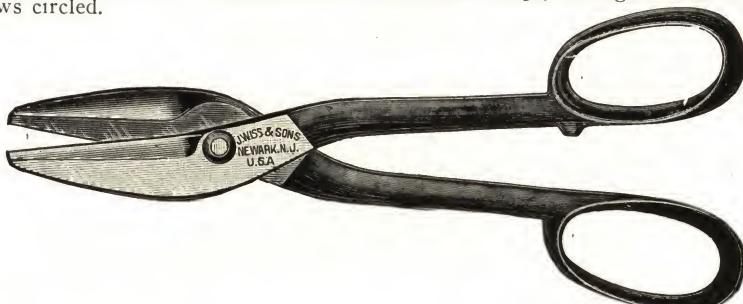


Nos.	7	8	9	10	12
Will cut, inches	4	3½	3	2½	2
Wiss Straight Snip, list per pair	\$2.50	\$2.00	\$1.50	\$1.40	\$1.00
Net per pair	..	..	..	..	..
Wiss Circular Snips, list per pair	3.50	3.00	2.50	..	..
Net per pair	..	..	..	..	..

Discount.....per cent.

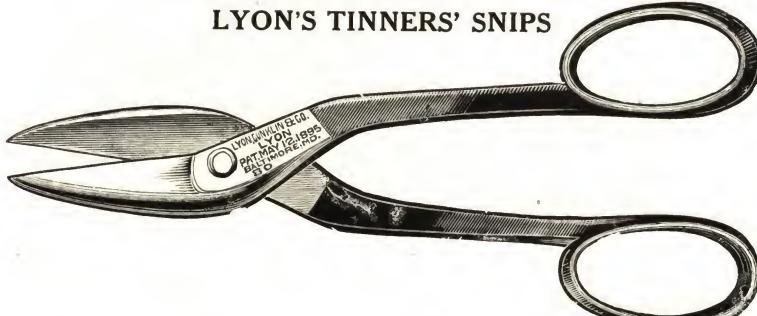
WISS COMBINATION SNIPS

Nos. 17, 18 19, Wiss Snips, are like the Buffalo Snips, having the inner faces of the jaws circled.



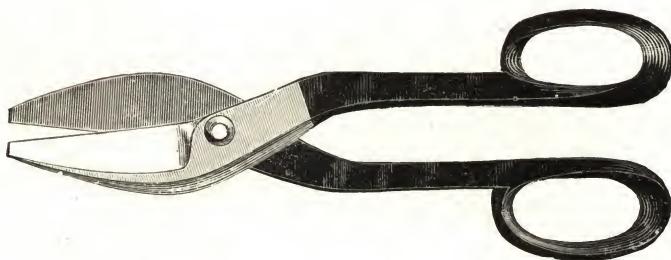
Nos.	17	18	19
Will cut, inches	4	3½	3
Wiss Combination Snip, list per pair	\$3.00	\$2.50	\$2.00
Net per pair	..	..	..

Discount.....per cent.

LYON'S TINNERS' SNIPS

Nos.	70	80	90
Will cut, inches	4	3½	3
List per pair	\$2.50	\$2.00	\$1.50
Net per pair	..	..	..

Discount.....per cent.

B. B. FORGED TOOL STEEL TINNERS' SNIPS**A Practical and Popular Priced Tool**

The B. B. Tinners' Snip is not intended for continuous work. On account of their cheap construction they can be furnished free by furnace manufacturers when making single shipments into country districts where practical tinnings are not used in the installation of the furnace.

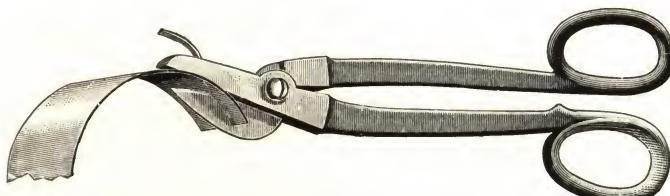
12-inch, length of cut $3\frac{1}{2}$ inches.....Price on application

COMPOUND LEVER SHEARS

Made from drop forgings. Very strong and durable and cut easier than the old styles. The old styles require two to three times the same amount of strength to operate in heavy metal. The back part of the inside of the blades is cut away so as to allow them to more easily pass over or under the stock in cutting either inside or outside curves.

10-inch, length of cut $2\frac{1}{2}$ inches, price.....	\$2.25
12-inch, " " " 3 " "	3.00
14-inch, " " " $3\frac{1}{2}$ " "	3.50

Discount.....per cent.

NIAGARA DOUBLE CUTTING SHEARS—FORGED

These Shears are drop-forged of refined iron. The center blade is of solid tool steel and the outer jaw is steel-laid. They will cut apart cylinders of sheet metal, such as stove pipe, without leaving ragged edges. Also very useful for cutting holes in sheets and cutting off the bottoms of cans, pails, etc., and other work. The center blade is pointed to be readily inserted into the metal, to start the cut. Total length, 7 $\frac{1}{2}$ inches.

Niagara Double Cutting Shears, net weight 36 oz.....\$3.00

KRAEUTER DOUBLE CUTTING SHEARS

This snip will work more satisfactorily than any other made, it having many improvements over all others. It is a high grade tool.

Kraeuter Double Cutting Shears, each.....\$2.75

DOUBLE CUTTING SHEARS AND PIPE CRIMPER

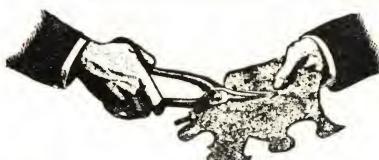
These Double Cutting Shears combined with a Pipe Crimper are now well known. The blade is pointed and readily inserted in the metal at the point desired to begin the cutting. They are adapted to cutting off the bottoms of pails, cans, etc., and suitable for cutting round or square work. The crimping attachment is designed for crimping any kind of sheet metal pipe, round or square. The parts are interchangeable, and the crimping jaws are of steel.

Double Cutting Shears, with Pipe Crimper, length 13 in., weighs 2 $\frac{1}{4}$ lbs.....\$3.00

THE UNIVERSAL METAL CUTTING SHEARS

Made in France

Patented in the various countries of Europe, also in the United States of America.



Manufactured from steel of an extra superior quality and highly tempered.

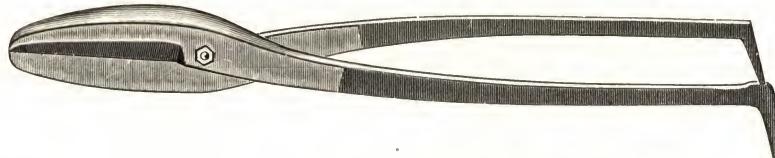
These Shears will enable any one to cut, with the greatest ease, all kinds of sheet metals, such as zinc, tin, sheet iron, copper, etc.

It not only cuts along straight lines, but follows also any description of curves, with equal ease, leaving a very clean cut edge.

Polished blades, black enameled handles.

No. 4, price each net \$4.50

NIAGARA BENCH SHEARS

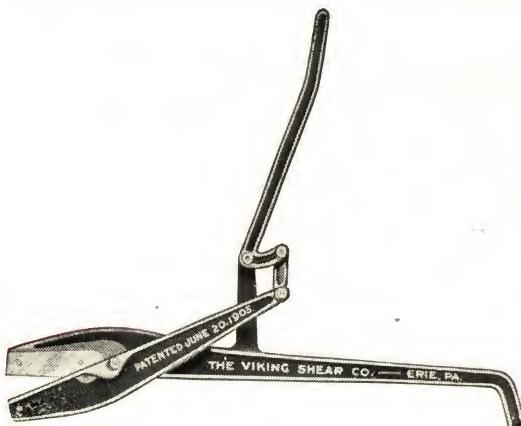


Nos.	00	0	1	2	3	4	5	6
Net weight, lbs.	33	29	21	17	13	10	8	6½
Length of jaws, in.	12	10½	9	8½	8¾	8	7	6
Price, each	\$13.50	12.00	8.00	7.00	6.00	5.00	4.00	3.50

ELBOW BENCH SHEARS

The jaws are rounded similar to Buffalo Snips, page 300, to permit of cutting curves and irregular shapes.

	Net Weight	
A, Elbow Bench Shears, cut 4 in.	8½ lbs.	\$ 5.25
B, " " " extra heavy, cut 6 inches	18½ lbs.	12.00
C, " " " double extra heavy, cut 7½ inches, entire length 46 inches	37 lbs.	18.00



Price, each \$.....

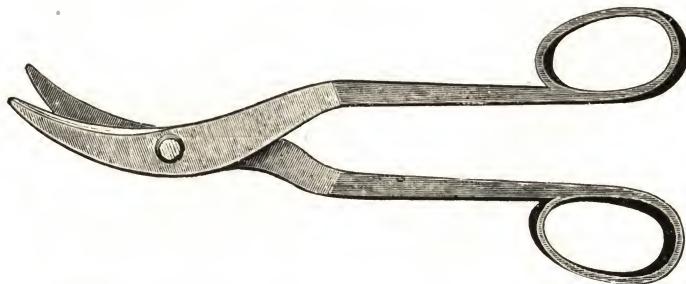
THE VIKING SHEAR

is invaluable to all classes of sheet metal workers, structural iron and steel workers, boiler shops, blacksmith shops, machine and repair shops, etc.

The Viking Shear combines simple construction, greatest shearing capacity, with rigidity and ease of operation, cutting with ease $\frac{1}{16}$ inch common iron, 12 gauge Bessemer steel, or $\frac{1}{4}$ inch brass, of any width.

No other portable shear will cut as heavy material, or cut it as fast and clean. One pound pressure on end of handles is equal to 20 pounds in center of blades.

Weight, 22 pounds.

HAWK'S BILL SHEARS**IMPROVED POINTED CURVED HAND SHEARS**

The above cut represents a curved shear of real worth and great merit. It is capable of cutting in sheet metal, openings of any kind and shape. Letters are easily cut out from sheet metal. They are especially adapted for cutting off the bottoms of metal vessels, and for cutting openings in pipes or cylinders of every description, for furnace jackets, thimbles, tee joints, etc. A bottom can be cut from a pint cup or a copper boiler with equal ease.

No. 15 Pointed snips, entire length 9 $\frac{3}{4}$ inches, weight 18 ounces, each.....\$3.00

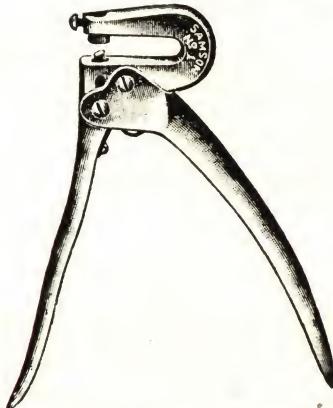
THE TRIUMPH PIPE SHEAR**No. 3**

For cutting stove pipe, furnace pipe, pail and boiler bottoms, removing old tin roofs, etc.

Price each, express charges prepaid.....\$ 1.00
Price, per dozen.....12.00

No. 1 "SAMSON" HAND PUNCH

(U. S. and Foreign Patents Pending)

**Special Feature: A Hand Tool that will Punch Steel**

Maximum power with steel, $\frac{3}{16}$ through 18 gauge.

Will punch through $\frac{1}{8}$ inch brass and paper in any thickness to the capacity of its throat opening; also slate without cracking.

Depth of throat $1\frac{3}{8}$ inches.

Tools installed with $\frac{1}{16}$ inch punch and die, other sizes supplied if wanted as per plate.

Made of drop-forged steel, screws case hardened, all parts interchangeable.

Polished and copper-nickel plated.

List price, per dozen.....\$20.00

Complete with 1 punch and die.

List price, boxes of dies (six sizes),
per box \$2.70

DANZER'S HANDY PUNCH

This is one of the most convenient tools that has ever been placed on the market. It is made of steel and will punch No. 16 iron or lighter. Has 1-inch throat with back gauge, three sets punches and dies, $\frac{1}{4}$ -inch, $\frac{3}{16}$ -inch and $\frac{1}{8}$ -inch, which can be easily changed. This punch is especially adapted for heat pipe, stack and blower work. Length, 15 inches; weight, 6 lbs.

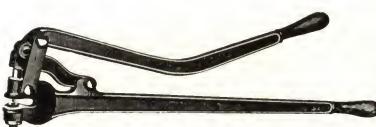
Price, net \$5.00
Extra punches or dies, each30

ADJUSTABLE "POCKET" SEAMER

A very handy and time-saving tool for sheet metal workers for making good seams on difficult joints, on a roof or in the shop. It pays for itself in a few days. Size $7 \times 3\frac{3}{8}$ inch. Can be carried in the pocket.

Prepaid to any address.....\$1.00

LIGHTNING PORTABLE HAND PUNCHES



Lightning Portable Hand Punch No. 1

No. 1 Punch takes punches and dies from $\frac{3}{32}$ inch to $\frac{1}{2}$ inch by 32nds.

Capacity, 14 gauge iron.

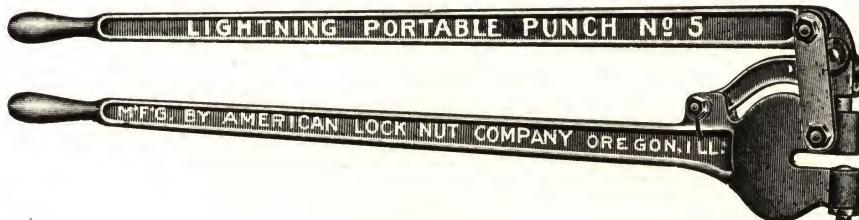
Depth of throat, $1\frac{1}{2}$ inches.

Power Lever, 18 inches long.

Weight, 8 pounds.

Weight of vise, 12 pounds.

Price No. 1 Punch, without Vise.....\$.....



No. 5 Punch takes punches and dies from $\frac{3}{32}$ inch to $\frac{1}{2}$ inch by 32nds. Capacity, $\frac{1}{4}$ -inch hole in $\frac{1}{16}$ -inch iron or its equivalent.

Depth of throat, 2 inches.

Weight, 16 pounds.

Power lever, 38 inches long.

Weight of vise, 12 pounds.

Price No. 5 Punch, without vise.....\$.....

Vise extra

WHITNEY PORTABLE HAND METAL PUNCH

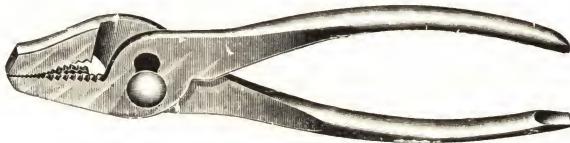


No. 2 Size: Drop-forged parts, total length, 23 inches; length power lever 22 inches; weight, 12 pounds; capacity, $\frac{1}{16}$ -inch hole in $\frac{1}{4}$ -inch iron or its equivalent; punches up to $\frac{1}{2}$ -inch hole in lighter metal. Weight of special vise for bench work, 5 pounds.

A full line of Punches and Dies of various sizes kept in stock.

Price No. 2 Whitney Punch.....\$.....

Price Vise extra

No. 305. VICTOR UNIVERSAL PLIER**Every Pair Guaranteed**

Length, 7 inches

Black.....per dozen, \$13.50 Plated.....per dozen, \$15.00

This is the only universal plier and wire cutter. Adjustable to any taper, half round, three square or parallel. Will take in pipe from $\frac{3}{8}$ to $1\frac{1}{4}$ inch.*Discount.....per cent.***No. 60. COMBINATION PLIER****Drop Forged of Best Tool Steel. Joint is Milled****Black**

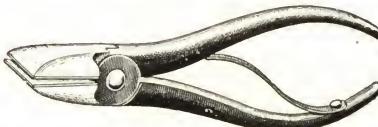
6 inch.....	Per doz., \$13.50
8 inch.....	" 16.50
10 inch.....	" 18.00

Plated

6 inch.....	per doz., \$15.00
8 inch.....	" 18.00
10 inch.....	" 21.00

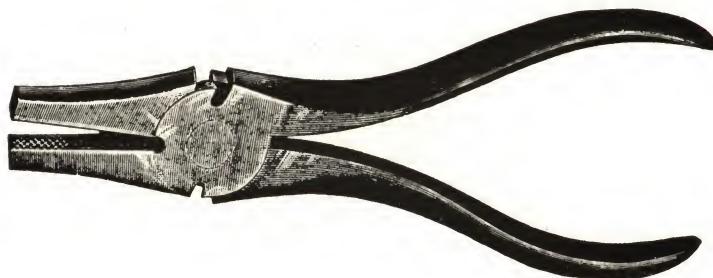
Discount.....per cent.

Every plier guaranteed in every respect.

PERFECTION SEAMING PLIERS**In Two Sizes—8-inch and 10-inch. Are Strong and Well Made**

They lighten the labor; they save one-half the time; nothing else like them or as good. The time they save in a week will more than pay for them. They are without an equal for double seaming and peening down seams on pipe, elbows, boxes, pans, cans or anything requiring a double seam or peened-down seam. They are also of great value for making small breaks on skylight bars and cornice work.

8 in., price each..... \$..... 10 inch, price each..... \$.....

BUTTON'S PATTERN WIRE CUTTING PLIERS**Drop Forged**

Size, inches	4½	6	8	10
Flush rivet, per doz.....	\$3.60	4.00	5.00	6.00

*Discount.....per cent.***THE NETTLETON REVERSIBLE NIPPERS****"TWO IN ONE"**

Four Cutting Edges. Reversible Jaws. Jaws Tempered for Music Wire if Desired



Size, inches	6	8	10	12	14
Price, each.....	\$1.50	1.75	2.00	2.25	2.50

*Discount.....per cent.***JAWS**

Size, inches	6	8	10	12	14
Price, pair	\$0.50	0.60	0.80	0.90	1.15

Discount.....per cent.

NIAGARA OVAL HANDLE FORMER—ADJUSTABLE



Forming pieces are furnished of $\frac{1}{2}$ and $\frac{5}{8}$ -inch radius. The length measured inside is adjustable from 3 to $3\frac{3}{4}$ inches.

Niagara Oval Handle Former.....	Net Weight 7 lbs.	Price \$3.00
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WIRE CUTTER AND BAIL FORMER



A durable and labor-saving tool. It takes wire from the coil, gauges and cuts it to the desired length. It cuts $\frac{1}{4}$ -inch wire, as well as all smaller sizes. Will gauge 2 to 60 inches.

The illustration shows the bail partly formed, with the handle in position.

	Shipping Weight Lbs.	Price
Wire Cutter and Bail Former.....	50	\$10.00
Extra Cutter		1.00

ROWE'S PIPE CRIMPER



It makes a gradual taper, and will crimp sheet metal from the lightest tin up to No. 20 iron. By the use of the Crimper there is no trouble in joining pipe. It can also be used for enlarging the ends of pipe by crimping and then flattening out.

Rowe's Pipe Crimper	\$1.20
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TINNERS' WIRE CHISELS



WIRE CHISEL

Wire chisels	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
List, each	\$0.08	.09	.10	.11	.12	.13	.14	.15	.17	.19	.20	.24	.29

Discount.....per cent.

LANTERN CHISELS



Lantern chisels, each.....	\$0.12
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Discount.....per cent.

TINNERS' SOLID PUNCHES



These punches are hand forged from octagon crucible steel and must not be compared with the square stock on the market. Average length, $4\frac{1}{2}$ inches.

Full size of ends



Nos.	0	1	2	3	4	5	6	7	8
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Nos.	0	1	2	3	4	5	6	7
Size of ends.....	$9/32$	$1/4$	$7/32$	$3/16$	$11/64$	$5/32$	$9/64$	$1/8$
For rivets, lbs.....	12	10	8	6	4	2	1	12 oz.
Size of steel.....	$7/16$	$7/16$	$7/16$	$7/16$	$3/8$	$3/8$	$5/16$	$5/16$

List Net

Set of solid punches (four punches, two chisels), per set.....	\$0.72	\$....
Solid punches, cast steel, Nos. 0, 1, 2, 3, 4, 5, 6, 7, 8 and prick, each.....	.12	....

Discount.....per cent.

COMMON OCTAGON COLD



KRAEUTER & CO

Diameter, inches	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{1}{1\frac{3}{8}}$
Size of cutting edge, inches.....	$\frac{7}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{1}{1\frac{3}{8}}$	$1\frac{3}{8}$
Per dozen	\$1.50	2.00	3.00	4.00	5.50	7.00

Discount.....per cent.

HOLLOW PUNCHES—SOLID FORGED



Hollow Punches, all sizes to and including 1¾-inch diam., round, per inch.....	\$ 1.00
" " above 1¾-inch diameter, per inch.....	1.25
Set of Hollow Punches, one each, ½, ¾, 1, 1½, 1¾-inch, per set.....	5.50

The above prices are for regular sizes from $\frac{1}{4}$ to 3 inches diameter, varying by $\frac{1}{8}$ -inch, which are carried in stock. Other sizes can be made to order, at special prices.

WITH CENTER POINT



The Center Point has many advantages. It enables the operator to find the center of the work to be punched. It also prevents the punched piece from sticking inside the punch and has a tendency to preserve the cutting edge of the punch.

Size, inches	$\frac{1}{2}$ to $\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\mathbf{1}$	$1\frac{1}{8}$
List price, each	\$1.25	\$1.35	\$1.50	\$1.75	\$2.00
Net, each	•••	•••	•••	•••	•••
Size, inches	$1\frac{1}{4}$	$1\frac{3}{8}$ to $1\frac{1}{2}$	$1\frac{3}{4}$ to $1\frac{7}{8}$	•••	•••
List price, each	\$2.25	\$2.50	\$2.75	•••	•••
Net, each	•••	•••	•••	•••	•••

Discount.....per cent

RIVET SETS AND HEADERS



TINNERS' RIVET SET, GUN METAL FINISH



KNURLED CENTER PUNCHES

Made of first quality tool steel. Every one is tested. Four inches long.

Size, inch	5/16	3/8	1/2
List per dozen.....	\$1.25	1.60	3.25

Discount.....per cent.

KNURLED PRICK PUNCHES

Made of the finest quality of tool steel.

5/16-inch, per dozen.....	\$1.25
3/8-inch, per dozen.....	1.60

Discount.....per cent.

PRICK PUNCHES

Forged of 5/16-inch octagon steel; length, 5 inches.

List per dozen.....	\$2.00
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One dozen in a box.

Discount.....per cent.

TINNERS' RING SCRATCH AWLS

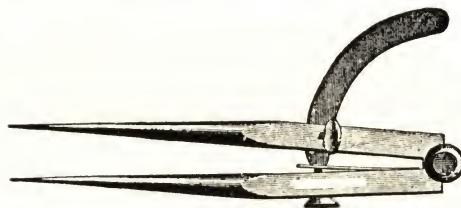
Forged of steel, 7 inches long.

List per dozen.....	\$1.50
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One dozen in a box.

Discount.....per cent.

WING DIVIDERS



Sizes, inches	5	6	7	8	9	10	12	15
Price, per dozen.....	\$5.50	5.50	6.50	7.50	9.00	10.00	12.00	18.00

Discount.....per cent.

TINNERS' ROOFING SCRAPERS

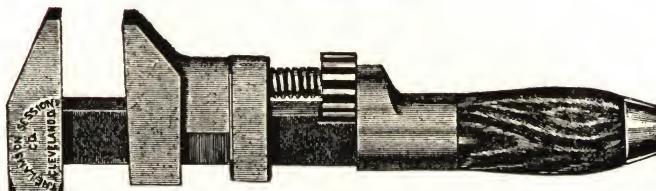


Forged from best quality steel; tempered and fully warranted.

Per dozen	\$6.00
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Discount.....per cent.

WRENCHES



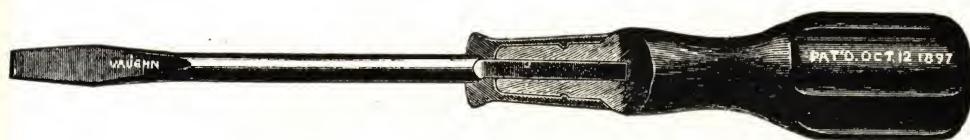
BLACK—AGRICULTURAL

Inch	6	8	10	12
Per dozen	\$10.00	12.00	14.00	17.00

Half dozen in a package.

Discount.....per cent.

VAUGHN'S "IMPROVED" SCREW DRIVERS

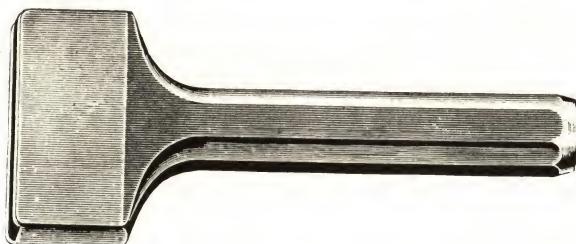


MACHINISTS'—ROSEWOOD FINISH

Size, inches	2	2½	3	4	5	6	7	8
Price per dozen.....	\$3.00	3.00	3.50	4.25	5.00	6.00	7.00	8.00
Size, inches	9	10	11	12	15	18	24	30
Price per dozen.....	\$9.00	10.00	11.00	12.00	15.00	18.00	24.00	30.00

Discount.....per cent.

TINNERS' HAND GROOVERS



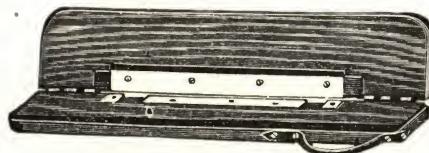
Forged of high-grade crucible steel.

Numbers	00	0	1	2	3	4	5	6
Width of groove, inch.....	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{33}{64}$	$\frac{3}{8}$	$\frac{5}{16}$	$\frac{1}{4}$	$\frac{3}{16}$	$\frac{5}{32}$
Each	\$0.75	.75	.63	.63	.50	.50	.37	.37

Half dozen in a box.

Discount.....per cent.

WOOD ROOFING FOLDERS



	Shipping Weight Lbs.	Price
Common wood roofing folders, for 20-inch tin.....	7	\$2.50
Common wood roofing folders, for 28-inch tin.....	12	3.50
Improved wood roofing folders, for 20-inch, with gauge.....	$7\frac{1}{2}$	3.50
Improved wood roofing folders, for 30-inch, with gauge.....	15	5.00

RIVETING AND SETTING HAMMERS—BRIGHT



RIVETING HAMMER



SETTING HAMMER

Nos.	0	1	2	3	4	5
Weight with handle, ounces.....	52	28	23	14	11	8
Size of face, inches.....	1½	1⅓	1	7/8	¾	5/8
Riveting Hammers, handled, per dozen....	\$15.50	9.75	8.31	6.75	5.31	4.75
" " each .....	.....	.....	.....	.....	.....	.....
Setting " " per dozen....	9.75	8.31	6.75	5.31	4.75	.....
" " each .....	.....	.....	.....	.....	.....	.....



RAISING HAMMERS, WITH HANDLES

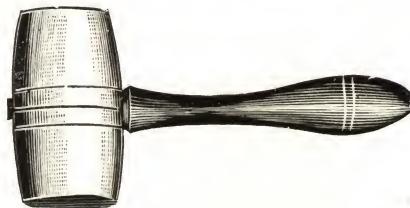
Nos.	1	2	3	4
Weight, pounds	4¾	3¼	2½	1¾
Raising Hammers, each.....	\$2.25	1.75	1.25	.75
Handles, extra, per dozen.....	\$1.25



PLANISHING HAMMERS

Planishing Hammers, per pound.....	\$1.00
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TINNERS' MALLETS

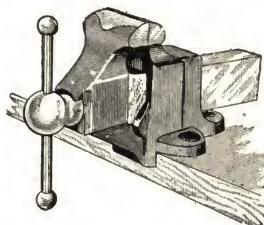


Tinners' Mallets, best seasoned hickory, assorted, from 2 to 3 inches, per dozen....	\$1.50
" " " " 3 inches, per dozen.....	1.75
" " " " 4 inches, per dozen.....	2.50

HAMMER HANDLES

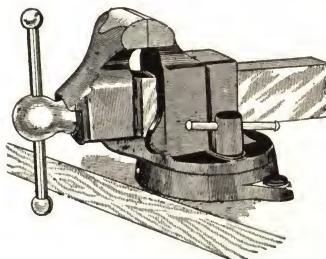


We carry in stock Handles to fit the Riveting and Setting Hammers as shown above.
13-inch, Adze Eye Hammer Handles, selected hickory, per dozen.....\$.....

SOLID JAW AND FLAT BOTTOM MACHINISTS' VISE

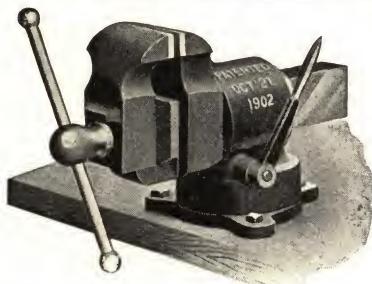
No.	Width of Jaw Inches	Opens Inches	Weight Pounds	List Price
103	3	4	22	\$ 6.00
103½	3½	5	27	7.00
104	4	6	42	8.50
104½	4½	6½	53	10.00
105	5	7½	72	13.00
105½	5½	9	102	18.50
106	6	10	130	25.00
107	7	12	210	37.50

Discount.....per cent.

SOLID JAW AND SWIVEL BOTTOM MACHINISTS' VISE

No.	Width of Jaw Inches	Opens Inches	Weight Pounds	List Price
203	3	4	28	\$ 7.50
203½	3½	5	37	8.75
204	4	6	52	10.50
204½	4½	6½	65	12.50
205	5	7½	90	16.00
205½	5½	9	117	22.00
206	6	10	152	30.00
207	7	12	235	42.50

Discount.....per cent.

COMBINATION UNIVERSAL DOUBLE SWIVEL PIPE VISE

No.	Width Vise Jaws Inches	Pipe Jaws Open Inches	Vise Jaws Open Inches	Size of Pipe Inches	Weight Pounds	List Price
K 2	4	4½	6	½ to 2	75	\$18.00
K 3	4½	5	7	¼ to 3	110	23.00

Discount.....per cent.

FILES

In response to the demand we have put into stock a limited quantity of files, endeavoring to get the kind generally used by tinners and others on whom we call.

It is our desire, in this respect, to accommodate our customers, and while ordinarily we do not care to break full packages we will in this case give our friends the privilege of ordering in any quantity.

The files are made by the Nicholson File Company and are therefore first-class in every way.

SLIM TAPER



Size, inches	4	5	6
Per dozen .....	\$.....	.....	.....
Each .....	\$.....	.....	.....

MILL BASTARD



Size, inches	8	10	12	14
Per dozen .....	\$.....	.....	.....	.....
Each .....	\$.....	.....	.....	.....

FLAT BASTARD



Size, inches	8	10	12	14
Per dozen .....	\$.....	.....	.....	.....
Each .....	\$.....	.....	.....	.....

FILES**HALF-ROUND BASTARD**

Size, inches	8	10	12	14
Per dozen .....	\$.....	.....	.....	.....
Each .....	\$.....	.....	.....	.....

HALF-ROUND LEAD FLOAT

A rather coarse file, adapted especially for tinnery use in smoothing down soldered joints, etc.

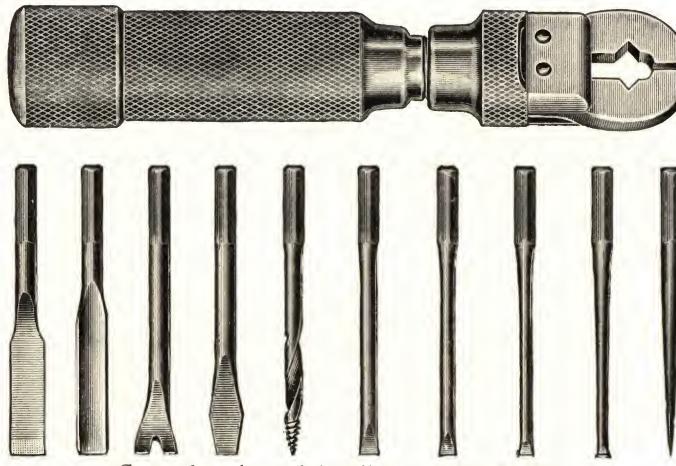


Size, inches	8	10	12	14
Per dozen .....	\$.....	.....	.....	.....
Each .....	\$.....	.....	.....	.....

ROUND BASTARD

Size, inches	8	10	12	14
Per dozen .....	\$.....	.....	.....	.....
Each .....	\$.....	.....	.....	.....

No. 1 COMBINATION TOOL HANDLE, PIN VISE AND END TAP WRENCH



Cuts of tools and handles, two-thirds size.

Indispensable on the machinists' bench, in the carpenters' tool box or in the household.

Consists of 10 oil tempered well finished forged steel tools adapted for mechanics' use.

Highly polished—indestructible.

No. 1 Combination Tool Handle.....Per dozen, \$15.00

IMPROVED SUCCESS EMERY GRINDER

3,000 revolutions per minute attained by a simple and easy motion of the foot.

The Greatest Grinder on Earth

For grinding drills, castings, machine parts, scissors, knives, and all kinds of tools. Is just the thing for bicycle repairmen, blacksmiths, jewelers, carpenters, butchers, harness makers, wagon makers, mechanics and farmers. Grinds twice as fast as any grindstone. Needs no turning, one person does it all.

Description

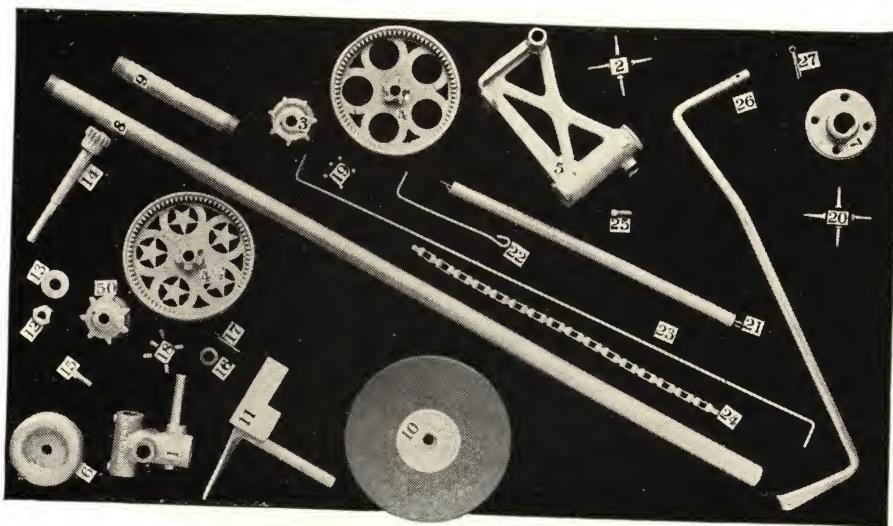
This machine when set up stands 4 feet high; the upper or standard is made of $\frac{3}{4}$ -inch tubing, and is very solid and strong. The emery wheel is of the highest grade, and is 8 inches in diameter by $1\frac{1}{4}$ inch face. It is supplied with a suitable and substantial rest. It has no belt to slip, loosen or break, neither has it lead gear teeth to wear out and bind. The movement of the foot operates a ball ratchet, which sends the emery wheel spinning easily at 2,000 revolutions per minute. The machine screws to the floor and wall, and is quickly and easily set up. We have experimented with every device on the market, and guarantee this machine to be the most substantial, most mechanically made and best finished in existence.

Each machine is crated for shipment.

Price, complete\$6.50



SUCCESS EMERY GRINDER PARTS



Price List of Parts—Order by Number

		Price Each	Postage Required		Price Each	Postage Required
1	Head casting	\$0.50	.24	14	Shaft and driving gear....	\$0.50 .10
2	Screws (4) for foot casting .....	.05	.01	15	Set screws (2).....	.05 .01
3	Sprocket with ball bearings .....	.20	.12	16	Washer for internal gear..	.05 .01
4	Internal gear, for ball bearings .....	.50	.31	17	Cotter pins (2).....	.05 .01
4½	Internal gear, for roller bearings .....	.50	.25	18	Roller bearings (5).....	.10 .01
5	Foot Casting .....	.35	.43	19	Ball bearings (5).....	.10 .01
6	Momentum flange .....	.15	.26	20	Screws (4) for wall flange.	.05 .01
7	Wall flange .....	.20	.10	21	Spring .....	.35 .08
8	Standard tube .....	.50	†	22	Short wire .....	.05 .01
9	Wall brace tube .....	.15	.10	23	Long wire .....	.15 .03
10	Emery wheel	1.50	*	24	Chain .....	.35 .06
11	Rest .....	.15	.14	25	Set screws (2).....	.05 .01
12	Nut for main shaft.....	.05	.01	26	Treadle rod .....	.35 .25
13	Washer for emery wheel.	.05	.01	27	Cotter pins (2).....	.05 .01
				50	Sprocket, with roller bearings .....	.20 .12

In ordering state whether your machine is fitted with sprocket and ball bearings or sprocket and roller bearings.

Numbers 4 and 5, going to near-by points, may be ordered by express at a cost possibly less than by mail.

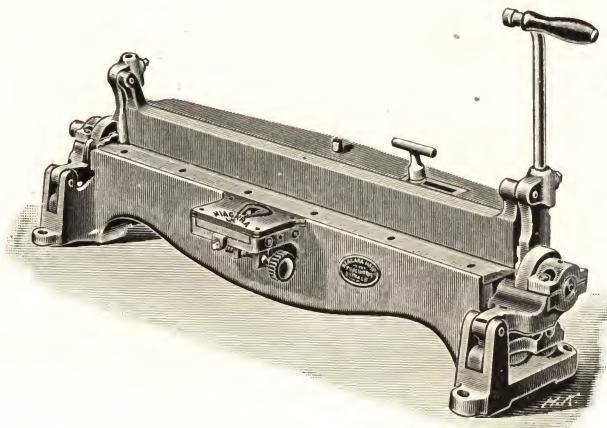
Price of parts being too small to open an account, remittance, including price of parts and postage necessary, may be made in stamps.

† Length 38 inches, order by express.

* Weight 6 pounds, order by express.

NIAGARA KEYSTONE BAR FOLDERS

(Patented)



These machines fold narrow and wide locks at various angles, form square joints and turn rounded edges ready to insert a wire. They form an edge of uniform width the entire length. Intended for tin and light sheet metal.

The gauge is adjusted by means of the knob on the side of the extension, and its adjustment, in fractions of inches, is indicated on the graduated dial. This arrangement enables the operator to set the gauge quickly without measuring or trying.

The adjustment of the folding bar for round or open locks is accomplished quickly and with ease, by means of the socket wrench shown in cut. This wrench is used to raise and lower the wing or folding bar by means of a wedge operated by rack and pinion, and the same wrench is used to fasten the wedge securely by a screw.

When adjusted for round or wire edges, the folding blade remains flush with the gripping jaw until the operator begins to bend the edge. This permits of entering the work into the gripping jaw without difficulty.

The folders leave the factory adjusted for 1C and IX tin, or other sheet metal of the same thickness. For thicker material the machine must be readjusted. Adjustable stop for any angle is now attached to the folder.

The parts of our bar folders are made on the interchangeable plan, and duplicate parts can be furnished. Give number of the part wanted and of the machine.

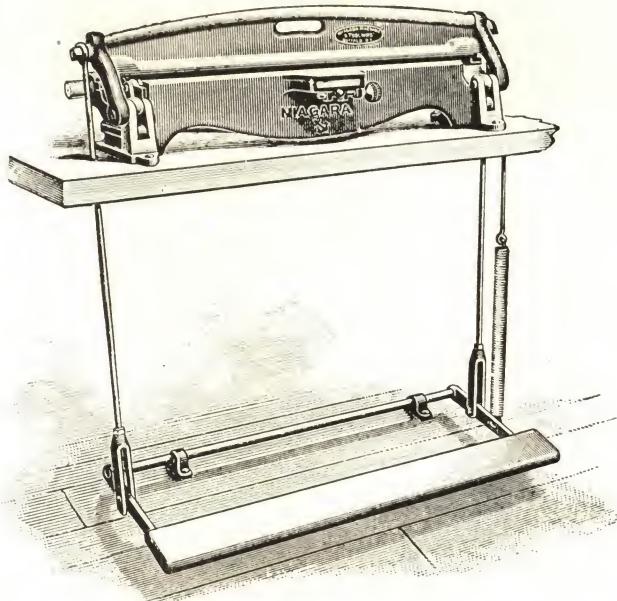
60-inch Keystone Bar Folder.—On this folder the gripping jaw is made stationary to avoid the necessity of lifting the heavy weight in clamping; the frame carrying the folding blade moves downward. This folder and the smaller sizes are suitable for round or wire edges, as well as sharp bends.

NIAGARA KEYSTONE BAR FOLDERS

For Open and Close Locks	Shipping Weight	Price
17 in. Keystone Folder, for locks from $\frac{3}{2}$ to 1 in.....	105 lbs.	\$ 25.00
21 in. Keystone Folder, for locks from $\frac{3}{2}$ to 1 in.....	120 lbs.	30.00
30 in. Keystone Folder, for locks from $\frac{3}{2}$ to 1 in.....	220 lbs.	40.00
36 in. Keystone Folder, for locks from $\frac{3}{2}$ to 1 in.....	260 lbs.	60.00
42 in. Keystone Folder, for locks from $\frac{1}{8}$ to $1\frac{1}{8}$ in.....	510 lbs.	90.00
60 in. Keystone Folder, for locks from $\frac{1}{8}$ to 2 in.....	1100 lbs.	200.00
Foot Treadle and Spring Attachments to 17 and 21 in. Folder, extra		12.00

30 inch and larger Folders have sockets for the handle at both ends of the machine. Our Keystone Bar Folders, 17 and 21 inches, can be furnished with foot treadle for operating the folding bar and spring attachment, if so desired.

KEYSTONE BAR FOLDER



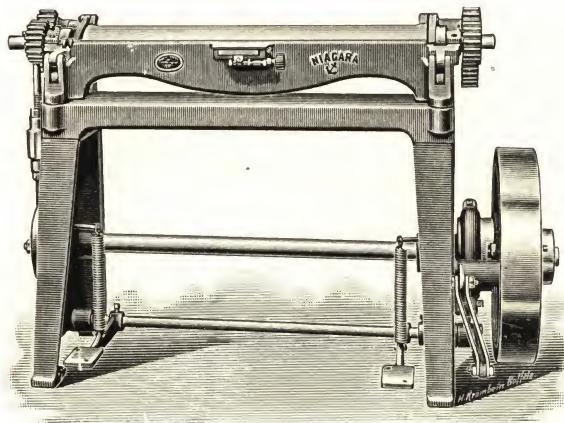
WITH SQUARE BODY AND PIPE ATTACHMENT

The attachment shown in the illustration makes the Bar Folder suitable for forming square and oblong can bodies, pipe, etc., not less than 3 by 6 inches, with sharp or slightly rounded corners. When the Folder is to be used for the regular work, the operator can swing the attachment downward, after disconnecting the treadle rods.

The treadle is now made as shown in cut page 329.

	Shipping Weight	Price
21 in. Keystone Bar Folder, with Square Pipe Attachment.....	150 lbs.	\$40.00
30 in. Keystone Bar Folder, with Square Pipe Attachment.....	270 lbs.	50.00
36 in. Keystone Bar Folder, with Square Pipe Attachment.....	320 lbs.	75.00

NIAGARA POWER BAR FOLDERS



Capacity, No. 24 Iron and Lighter

These machines possess all the advantages of our celebrated Keystone Bar Folders; viz: adjustable gauge with index, adjustment for rounded locks and automatic clamp, but instead of being operated by hand, they are power driven, which is a decided advantage when the work is done in large quantities. The operator is left with both hands free.

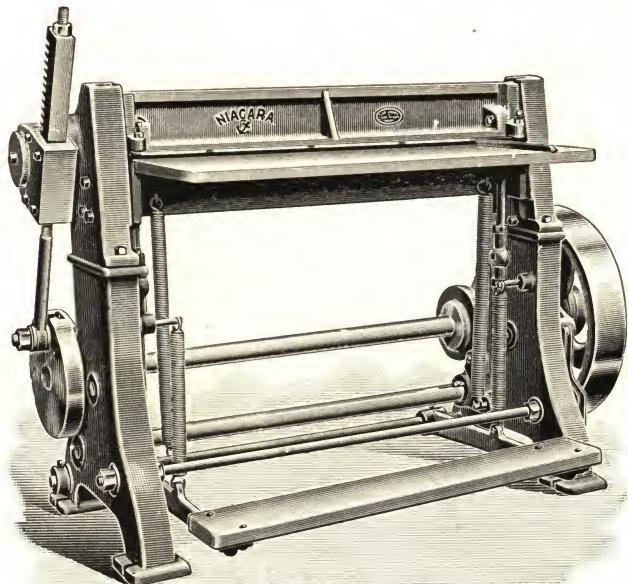
Both ends of the folding bar are driven by means of segments and pinions from a rocking shaft, which is oscillated by a crank. The motion is controlled by a positive clutch that causes the folding bar to make one turn and then stop, ready for the next sheet. If the operator keeps the treadle depressed, the motion will be continuous.

Adjustment can be made to regulate the angle at which the edge shall be bent.

Size of flywheel, 22 x 4 inches; speed, 60 revolutions per minute.

	Shipping Weight Lbs.	Price
30-inch Power Bar Folder, for locks from $\frac{3}{2}$ to 1 inch.....	1050	\$.....
36-inch " " " " " $\frac{3}{2}$ to 1 inch.....	1200	.....
42-inch " " " " " $\frac{1}{8}$ to $1\frac{5}{8}$ inch.....	1425	.....

AUTOMATIC POWER FOLDERS



36 Inch

The sheet is clamped between the bed and top bar, and remains stationary while the edge is being folded. The motion is controlled by a positive clutch.

Adjustable for locks from $\frac{1}{16}$ to $\frac{3}{4}$ inch wide.

The clamping bar raises sufficiently to permit of withdrawing the sheet with the edge folded.

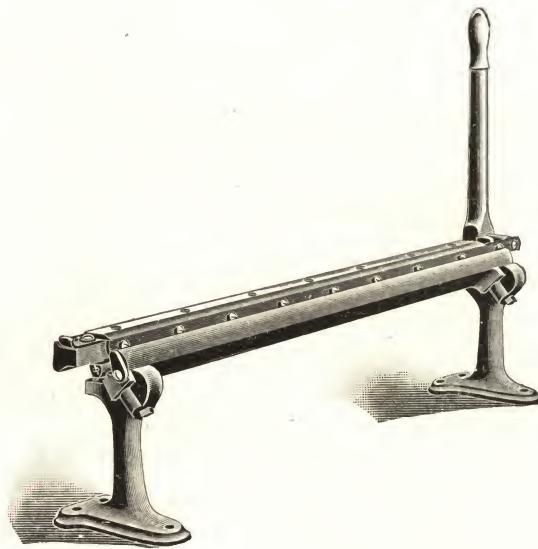
Can be modified for special folding work, double locks, combined grooving and folding operations, etc., also for rounded locks, in which case an extra folding blade is required.

36 in.: Size of flywheel, 22 x 4 inches; speed, 60 revolutions per minute.

10 ft.: Size of flywheel, 25 x 4 inches; speed, 200 revolutions per minute.

Capacity	Shipping Weight	Price
36 in. Automatic Power Folder, No. 22 Iron.....	1250 lbs.	\$.....
10 ft. Automatic Power Folder, No. 24 Iron.....	4200 lbs.	.....

NIAGARA ADJUSTABLE PIPE FOLDER



Capacity, No. 24 Iron and Lighter

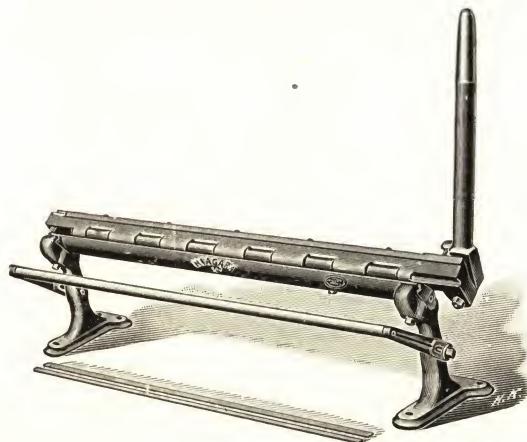
Tinsmiths who have used the ordinary Stove Pipe Folders have found that the same cannot be relied on to do accurate work, owing to variations in the hardness of the material. They will frequently turn uneven locks, and locks made with the same adjustment of the gauge will vary in width.

The accompanying cut shows a Pipe Folder which overcomes this difficulty. The edge of the sheet is inserted and clamped the same as in the well-known Wright's Folder. It is folded by swinging the bar and blade, between which the material is clamped, towards the operator, and while passing the upper edge of the frame the material is bent around the folding blade. To prevent the edge of the frame from being worn off, a steel rod is inserted to protect it. This rod can be renewed at a trifling expense.

The Niagara Adjustable Pipe Folder is sure to produce a lock of uniform width the entire length, as variations in the hardness of the material have no influence whatever. Furthermore, the Folder possesses the advantage of having an adjustable gauge for locks from $\frac{1}{16}$ to $\frac{3}{8}$ inch wide, and on sheets longer than the machine edges can be bent far enough over to be readily hammered down, similar to Fairchild's Folder.

	Shipping Weight Lbs.	Price
Niagara Adjustable Pipe Folder, 30 inches.....	90	\$14.00
" " " 42 inches.....	130	24.00

WRIGHT'S FOLDER



WRIGHT'S FOLDER WITH FAIRCHILD'S ATTACHMENT

This Folder is particularly intended for folding the edges of sheets already formed in cylindrical shape by means of rolls, and it will also fold straight sheets.

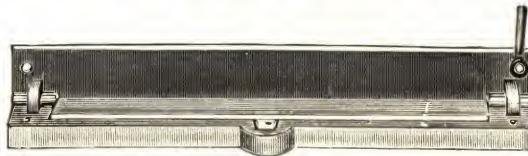
The Fairchild's Attachment gives the advantage that an edge can be turned on sheets of any length. For this purpose use the round rod, placing it so that the sheet will be put into the machine over it, and turn the folding bar against its round surface, making a slight bend the entire length of the sheet, and repeating the operation of bending until the lock is finished. On a long sheet, the edge can be turned only slightly more than at right angle, enough, however, to be readily hammered down.

To fold locks wider than the depth of the folding plate, use the steel strips, which accompany the Fairchild's Folder, under the plate, to increase its width.

Wright's Folder, width of locks, $\frac{3}{16}$ to $\frac{5}{16}$ inch; capacity, No. 24 iron.

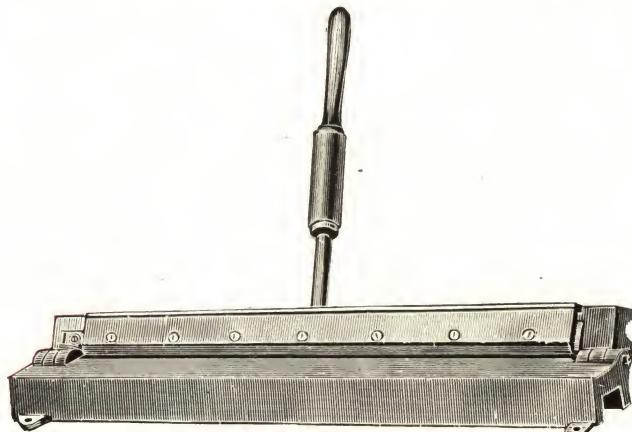
Fairchild's Folder, width of locks, $\frac{3}{16}$, $\frac{5}{16}$, $\frac{1}{2}$, $\frac{5}{8}$ inch; capacity, No. 24 iron.

		Shipping Weight Lbs.	Price
30-inch	Wright's Folder.....	75	\$12.00
42-inch	" "	110	20.00
62-inch	" "	185	46.00
30-inch	" " with Fairchild's Patent Attachment.....	80	15.00
42-inch	" " " " " " " "	120	24.00
62-inch	" " " " " " " "	200	50.00

IRON BOTTOM FOLDER**Capacity, No. 24 Iron and Lighter**

For ordinary work. Width of locks from $\frac{3}{8}$ to $\frac{1}{2}$ -inch.

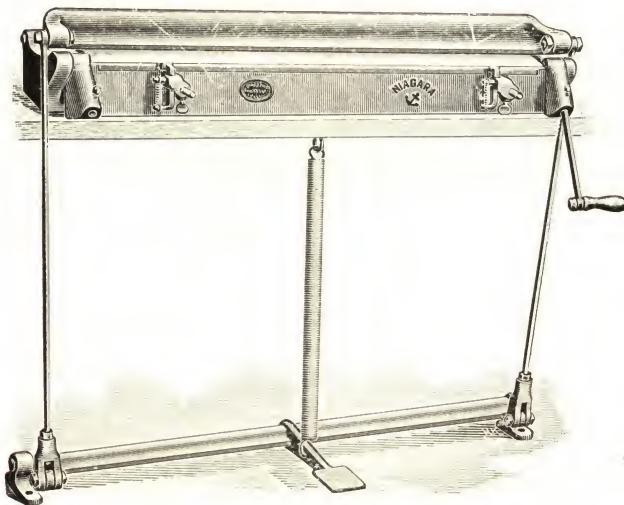
	Shipping Weight Lbs.	Price
30-inch Iron Bottom Sheet-Iron Folder.....	65	\$ 7.00
39-inch Iron Bottom Sheet-Iron Folder for No. 26.....	82	12.00

IMPROVED SHEET-IRON FOLDER**Capacity, No. 24 Iron and Lighter**

This folder is so constructed that the gauge always moves upon a line parallel with the edge of the folding plate. In place of the wooden handle we now furnish a steel handle. Width of locks from $\frac{1}{8}$ to $\frac{3}{8}$ -inch.

	Shipping Weight Lbs.	Price
30-inch Improved Sheet-Iron Folder.....	80	\$ 10.00
42-inch " " " "	120	18.00
60-inch " " " "	280	25.00
72-inch " " " "	415	60.00
96-inch " " " " with counterbalanced bar....	1060	100.00

NIAGARA OPEN THROAT FOLDER, IMPROVED



For No. 24 Iron and Lighter

This Folder works on the principle of a cornice brake. The sheet remains stationary while the edge is being folded and released. The clamping bar is actuated by foot treadle and counterbalanced by a spring.

An adjustable front gauge is provided for close locks from $\frac{1}{4}$ to 2 inches wide. As the sheet can be moved through from front to back, the machine can also be used for bending the material any distance from its ends, but in this case the angle of the bend cannot be less than 40 degrees.

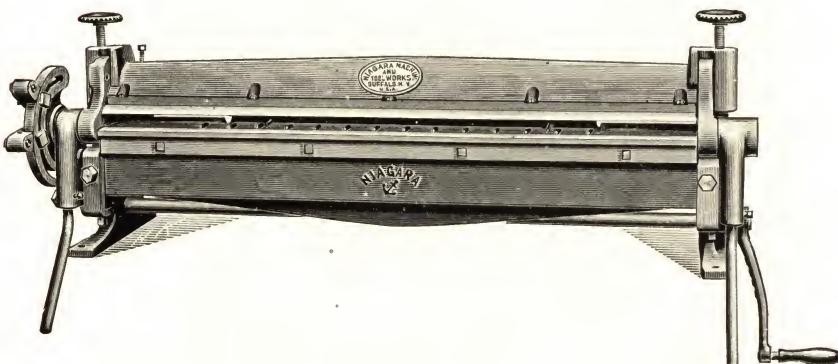
	Shipping Weight		Price
36-inch Niagara Open Throat Folding Machine.....	220 lbs.		\$.....

BENCH SQUARE PIPE FORMER, IMPROVED

We make a machine, similar to the above, with a hinged clamping bar substituted for the regular one, adapted to forming square pipe three inches and larger. Gauges are furnished to allow of making the bends without marking the sheet. The clamping bar swings outward, to facilitate removing the pipe.

	Shipping Weight		Price
36-inch Bench Square Pipe Former.....	220 lbs.		\$.....

NIAGARA UNIVERSAL FOLDER AND BRAKE



For No. 20 Iron and Lighter

This machine combines the advantages of an ordinary Folder with those of a Cornice Brake.

Clamping Bar has a parallel motion up and down of 1 inch, and when in the lower position gives a firm grip upon the material. The two screws on top of the frames are used to fix the lower position of the clamping bar when more or less space is needed for the material or forming bars. The largest space obtainable between the clamping bar (when in the upper position) and the bed is 3 inches.

The Swinging Folding Bar is adjustable up and down to permit of making round as well as sharp bends. It is made of solid steel, the upper edge being $\frac{3}{8}$ of an inch wide, so that small members can be formed. For ordinary work an angle-shaped bar is attached, which increases the width to 1 inch.

Folding Blade around which the material is bent is fastened by means of screws, and it can easily be removed to permit of substituting others of different profile.

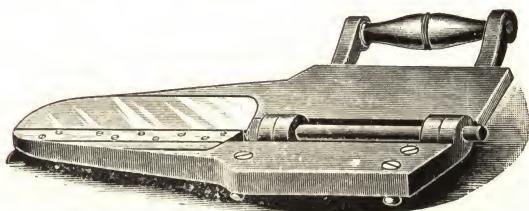
Back Gauge is adjustable from $\frac{1}{4}$ to 10 inches, and it can be removed entirely. The rods that carry the gauge are graduated in sixteenth inches.

Adjustable Stops. On the one end of the Folder there is a segment-shaped casting carrying adjustable stops to regulate the angle of the bend. The stops can be thrown instantly in and out of position.

Front Gauge adjustable for locks from $\frac{1}{4}$ to $\frac{3}{4}$ inch wide can be provided at extra cost.

	Shipping Weight	Price
42 in. Niagara Universal Folder and Brake, including one blade for sharp locks.....	485 lbs.	\$.....
60 in. Niagara Universal Folder and Brake, including one blade for sharp locks.....	1150 lbs.	.....
Adjustable Front Gauge, extra.....	.....	.....
Iron Legs, extra.....	.....	.....

CAN TOP FOLDING MACHINE



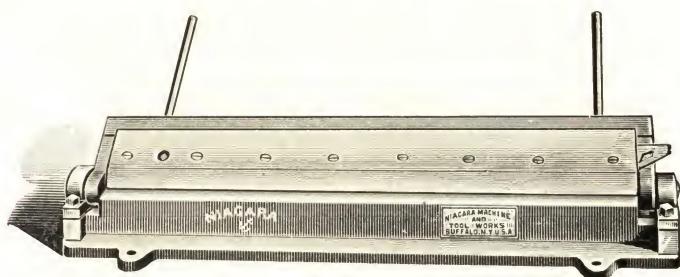
The open end of these Folders makes them suitable for edging blanks for oil can breasts, funnel bodies, drums, etc.

No. 2, length of blades 10 inches for tin.

No. 3, length of blades 13 inches for No. 26 iron and lighter.

	Weight	Price
No. 2 Can Top Folder for $\frac{1}{8}$ to $\frac{1}{4}$ in. locks.....	20 lbs.	\$10.00
No. 3 Can Top Folder for $\frac{1}{8}$ to $\frac{3}{8}$ in. locks.....	65 lbs.	15.00

HEAVY SHEET IRON FOLDERS



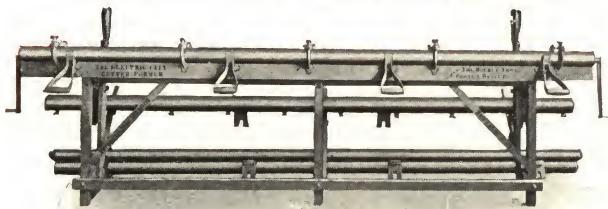
Capacity No. 20 Iron

These are accurate and strong machines. They have a gauge adjustable to the widths mentioned below.

No. 4, 72 and 96-inch, and No. 6, 48-inch Folders have a counterbalanced folding bar to facilitate the work.

	Shipping Weight	Price
No. 4 30 in. Sheet Iron Folder, for locks from $\frac{1}{4}$ to 1 in.....	190 lbs.	\$ 30.00
No. 4 42 in. Sheet Iron Folder, for locks from $\frac{1}{4}$ to 2 in.....	390 lbs.	50.00
No. 4 48 in. Sheet Iron Folder, for locks from $\frac{1}{4}$ to 2 in.....	450 lbs.	60.00
No. 4 72 in. Sheet Iron Folder, for locks from $\frac{1}{4}$ to 2 in.....	950 lbs.	120.00
No. 4 96 in. Sheet Iron Folder, for locks from $\frac{1}{4}$ to 1 in.....	1350 lbs.	160.00
No. 6 30 in. Sheet Iron Folder, for locks from $\frac{1}{4}$ to 1 in.....		42.00
No. 6 48 in. Sheet Iron Folder, for locks from $\frac{1}{4}$ to 1 in. for No. 18 iron	725 lbs.	80.00

ELECTRIC CITY GUTTER FORMER



The above cut represents our latest improved 10 ft. Gutter Former, for forming half-round gutter, either lap or slip joint, with bead on one or both edges, in either eave or roof pattern.

THE ELECTRIC CITY GUTTER FORMER PRICE LIST

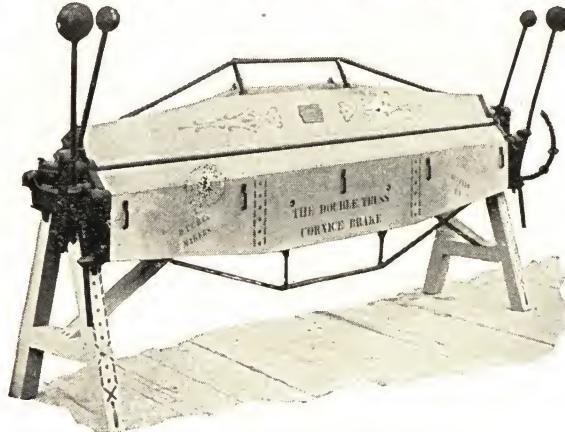
	Length	No. of Rolls	Size of Rods, In.	Weight Boxed, Lbs.	Price
No. 30.....	8 ft. 1 in.	3	$\frac{1}{2}$	240	\$55.00
No. 40.....	8 ft. 1 in.	4	$\frac{1}{2}$ and $\frac{5}{8}$	280	65.00
No. 50.....	10 ft. 1 in.	3	$\frac{1}{2}$	290	60.00
No. 60.....	10 ft. 1 in.	4	$\frac{1}{2}$ and $\frac{5}{8}$	350	70.00

No. 30 machine is supplied with 3 forming rolls and one $\frac{1}{2}$ -in. steel beading rod, and forms gutter 3 inches to 6 inches wide, with $\frac{5}{8}$ -in. bead on one or both edges.

No. 40 machine is supplied with 4 forming rolls and 2 steel beading rods, $\frac{1}{2}$ -in. and $\frac{5}{8}$ -in., and forms gutter 3 inches to 5 inches wide with $\frac{5}{8}$ inch bead, and 6 inch to 8 inch gutter with $\frac{3}{4}$ -inch bead, on one or both edges.

Discount.....per cent.

THE "NEW IMPROVED" DOUBLE TRUSS CORNICE BRAKE



Made in all lengths from 3 to 10 feet. They bend No. 22 gauge or lighter straight and true, and form any design exactly the same as the all-iron machines, and cost but half the money. Guaranteed to give every satisfaction.

Size, feet	3	4	5	6	8	10
Shipping weight, lbs...	250	300	525	650	850	1175
List	\$40.00	50.00	65.00	85.00	115.00	145.00

THE EXTRA HEAVY DOUBLE TRUSS CORNICE BRAKE

The same construction as the "New Improved" brake, except that it is heavier, capacity being 18 gauge and lighter.

Size, feet	4	5	6	8
Shipping weight, lbs.....	550	712	885	1185
List	\$57.00	74.00	95.00	132.00

Discount.....per cent.

ROBINSON IMPROVED DOUBLE ECCENTRIC CORNICE BRAKE



The above cut shows the general design of our Cornice Brake. These machines are guaranteed for No. 20 gauge material and lighter, and with heavy bending attachment for No. 18 gauge. With each brake is furnished 2½-inch, 2-inch, 1½-inch and 1¼-inch wood formers, and 1-inch, 7/8-inch and ¾-inch iron forms, also friction clamps for holding same. All machines are fitted with foot treadles, quadrant gauge and three quadrant stops.

On our 36-inch and 30-inch Cornice Brake we do not furnish these machines with removable steel plates, but make the bending edge either solid cast iron or steel.

The bending edge on top clamp of all our Cornice Brakes is faced with hard steel.

Name of Machines	No. of Ma- chines	Type of Ma- chines	Code Word	List Price
10 foot Cornice Brake, ¼-inch cast iron bending edge	1	B	Abode	\$342.00
10 " " " ¼-inch steel bending edge....	65	C	Acorn	363.00
8 " " " solid cast iron bending edge....	2	A	Account	180.00
8 " " " ¼-inch cast iron bending edge	7	B	Adorn	185.00
8 " " " ¼-inch steel bending edge....	8	C	Adown	195.00
6 " " " solid cast iron bending edge...	3	A	Accent	120.00
6 " " " ¼-inch cast iron bending edge	66	B	Action	124.00
6 " " " ¼-inch steel bending edge....	67	C	Actor	133.75
4 " " " solid cast iron bending edge...	4	A	Acme	96.00
4 " " " ¼-inch cast iron bending edge	68	B	Assume	102.00
4 " " " ¼-inch steel bending edge....	69	C	Advance	109.00
35 " " " solid cast iron bending edge...	5	A	Act	62.25
36 " " " solid steel bending edge.....	70	C	Arc	71.00
30 " " " solid cast iron bending edge...	6	A	Adapt	46.50
30 " " " solid steel bending edge.....	71	C	Arcade	55.50

We shall be glad to receive inquiries for any other style of Robinson Brakes, which can be furnished for factory shipment. Special attention is given to power brakes, toggle presses, etc.

THE CHICAGO STEEL BRAKES

(Patented)

GENERAL INFORMATION

Steel Superior to Cast Iron

Chicago steel brakes have advantage over cast iron brakes because:

1. Steel has three times the strength of cast iron.
2. Steel brakes stay perfectly straight and true under all conditions.
3. Cast iron is frequently spongy and therefore of uncertain quality, while steel is uniform and always reliable.

Cast iron brakes, when subjected to strain, become "sprung" because the coarse grain of iron prevents cohesion of its particles.

Wooden brakes warp, but Chicago steel brakes can't possibly warp and never get sprung.

No. 1. CHICAGO STEEL CORNICE BRAKE

Length of forming edge 12 feet 1 inch. Designed for cornice and other light work. Will bend No. 18 gauge with edge of 1 inch or more. Weight, 4000 pounds. Complete with angle steel extension and five formers. This machine is the same proportionately as the No. 2.

No. 2. CHICAGO STEEL CORNICE BRAKE

Length of forming edge 10 feet 1 inch. This machine is adapted for various work up to 1 inch flange, or more on No. 16 gauge, full length as well as light work. Weight 2,500 pounds. Angle and five formers furnished.

No. 2B. CHICAGO STEEL CORNICE BRAKE

To bend material for cornices and other light work. Will form as narrow as $\frac{3}{4}$ inch edge and more, on No. 18 gauge. Weight 1,900 pounds. Somewhat lighter than No. 2. Length 10 feet 1 inch. Formers and angle steel furnished.

No. 2C. CHICAGO STEEL CORNICE BRAKE

Length of forming edge 8 feet 1 inch. The construction of this brake is the same as that of steel range maker's brake (see illustration on Page 338), without slots. Intended for both heavy and light work to 1 inch and wider, turn on No. 14 gauge. Furnished with angle bar reinforcement for heavy material. Weight 2,000 pounds.

No. 3 CHICAGO STEEL CORNICE BRAKE

Length of forming edge 8 feet 1 inch. Adapted for moderately heavy and also light bending and cornice work. As small as 1 inch and larger edge can be bent on No. 16 gauge. Weight 1,500 lbs. Angle extension and formers included.

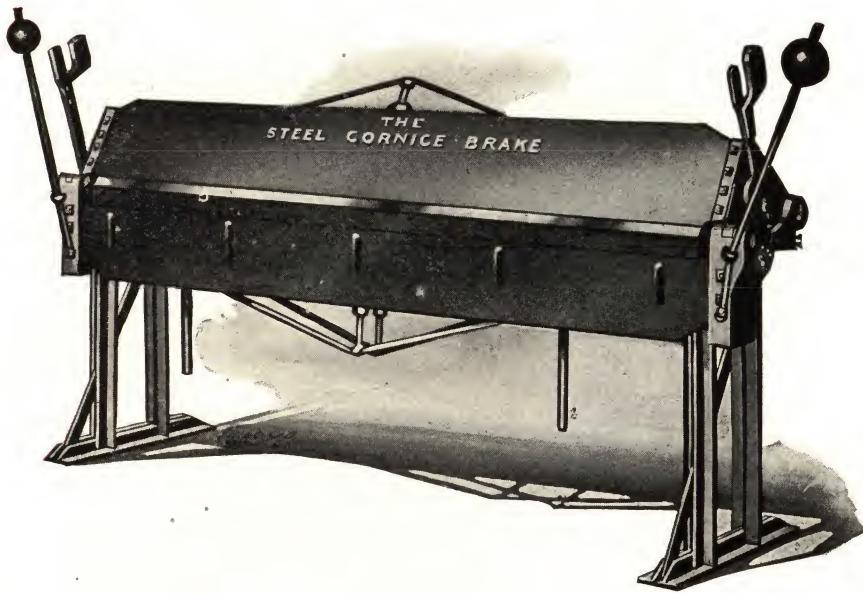
No. 3B CHICAGO STEEL CORNICE BRAKE

Length of forming edge 6 feet 1 inch. Proportionally the same as No. 3, and will form a variety of light work up to No. 16 gauge $\frac{3}{4}$ inch and wider flange. Weight 1,100 lbs. Angle bar and formers furnished. Same as No. 3, except the length.

No. 4 CHICAGO STEEL CORNICE BRAKE

Length of forming edge 8 feet 1 inch. Suitable for cornice and other light work, as well as $\frac{3}{4}$ inch and more, bends on No. 18 gauge. Steel angle bar is supplied together with set of formers. Weight 1,000 lbs.

#818 ✓



No. 4 Chicago Steel Cornice Brake

No. 4B CHICAGO STEEL CORNICE BRAKE

Length of forming edge 6 feet 1 inch. This machine is of a similar construction to the No. 4. It is intended for working No. 18 gauge with $\frac{3}{4}$ inch edge and wider. Formers and angle extension to apron furnished. Weight 800 lbs.

No. 4C CHICAGO STEEL CORNICE BRAKE

Length of forming edge 5 feet 1 inch. Aside from length the same as No. 4. To bend $\frac{3}{4}$ inch and wider on No. 18 gauge. Angle and formers furnished. Weight 700 lbs.

No. 5 CHICAGO STEEL CORNICE BRAKE

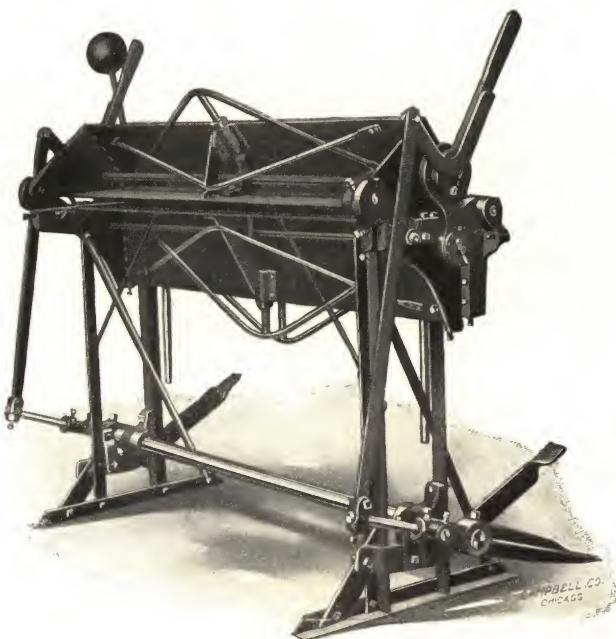
Length of forming edge 4 feet $\frac{1}{2}$ inch. To bend 1-inch and wider edge on No. 14 gauge and lighter. Well adapted for automobile and manufacturing work. Complete with angle reinforcement for apron. Weight 800 lbs.

No. 5B CHICAGO STEEL CORNICE BRAKE

Length of forming edge 3 feet $\frac{1}{2}$ inch. Otherwise similar to the No. 5. Will form 1-inch and wider bend on No. 14 gauge. Angle bar for apron furnished. Weight 550 lbs.

No. 6 CHICAGO STEEL CORNICE BRAKE

Length of forming edge 4 feet $\frac{1}{2}$ inch. Suitable for medium and also light bending. Will form No. 16 gauge with 1-inch edge and wider. Formers and steel angle furnished. Weight 500 lbs. Treadle not included.



No. 6 Chicago Steel Cornice Brake (Rear View)

The automatic treadle attached to the No. 6, as shown by above illustration, can be fitted to any Chicago Steel Cornice Brake. This is not included with the brake, but is charged for extra.

Attention is called to the rigid construction and to the patented truss arrangement on the back of the brake. Same is maintained throughout all sizes.

No. 6B CHICAGO STEEL CORNICE BRAKE

Length of forming edge 3 feet $\frac{1}{2}$ inch. Practically the same design as the No. 6, except length. To bend 1-inch and larger edge on No. 16 gauge. Angle extension and formers furnished. Weight 400 lbs.

THE CHICAGO STEEL ELECTRIC WORKERS' BRAKE

This machine is intended specially for making electric switch boxes and miscellaneous pan work. The upper part is set back 6 or 8 inches, and a number of detachable jaws are extended forward to the edge of the lower jaw, leaving about $\frac{3}{8}$ -inch space between each extension for the first formed sides. By a combination of the various sized jaws many lengths can be obtained. Will bend No. 12 gauge.

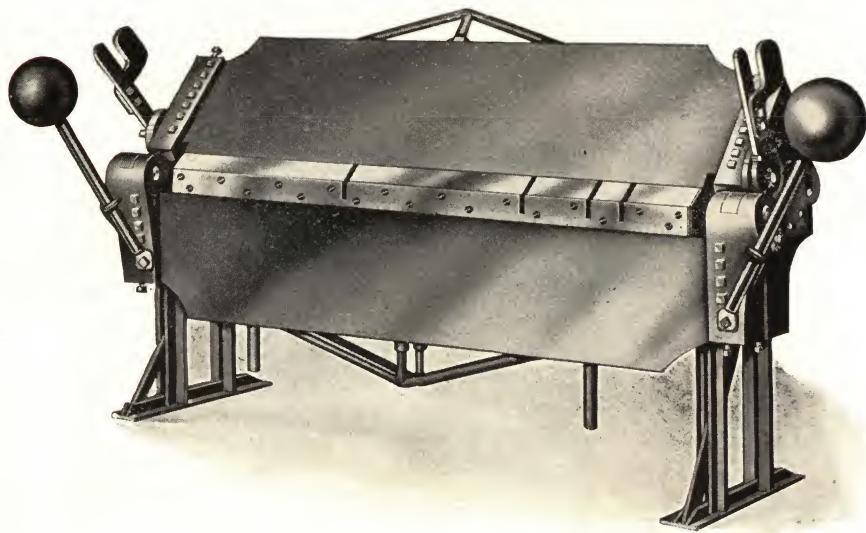


No. 30	3 ft.	Weight 800 lbs.	Jaws in 4 sections.	6 in. deep.
No. 31	4 ft.	Weight 1,000 lbs.	Jaws in 5 sections.	6 in. deep.
No. 32	5 ft.	Weight 1,200 lbs.	Jaws in 6 sections.	6 in. deep.
No. 33	3 ft.	Weight 850 lbs.	Jaws in 4 sections.	8 in. deep.
No. 34	4 ft.	Weight 1,050 lbs.	Jaws in 5 sections.	8 in. deep.
No. 35	5 ft.	Weight 1,300 lbs.	Jaws in 6 sections.	8 in. deep.

Any number of extension jaws can be fitted to these machines at the regular price each, for all over the number specified above.

THE CHICAGO STEEL RANGE MAKERS' BRAKE

This machine is built on the same lines and contains all the features embodied in the cornice brakes. Slots are cut to suit the particular requirements of manufacturing steel ranges and other work, where openings are required for flanges.



	Length of Forming Edge	Gauge	Weight
No. 10	3 ft. $\frac{1}{2}$ inch.....	16	450
No. 11	4 ft. $\frac{1}{2}$ inch.....	16	650
No. 12	6 ft. 1 inch.....	16	1,100
No. 13	8 ft. 1 inch.....	16	1,500
No. 14	10 ft. 1 inch.....	16	2,500
No. 15	3 ft. $\frac{1}{2}$ inch.....	14	550
No. 16	4 ft. $\frac{1}{2}$ inch.....	14	850
No. 17	6 ft. $\frac{1}{2}$ inch.....	14	1,500
No. 18	8 ft. $\frac{1}{2}$ inch.....	14	2,000
No. 19	10 ft. $\frac{1}{2}$ inch.....	14	3,200

We recommend gearing for crank or spider on Nos. 14, 18 and 19. Full information furnished on power arrangements, etc., upon application.

"SUPERIOR" MACHINE STANDARD

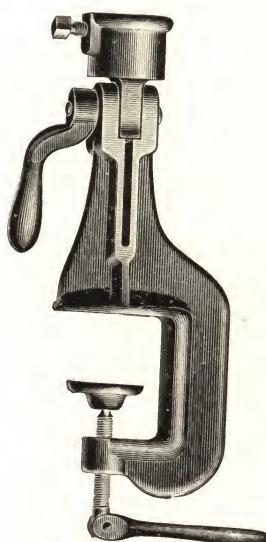
This Standard is furnished with all Niagara "Superior" Machines unless the "Improved" Standard is ordered, which will be charged for extra. It is quickly adjusted to any bench varying in thickness from 1 to $3\frac{1}{2}$ inches. Owing to the shape of the Standard, the socket is in such position that the machine is brought beyond the bench, and even on large work the bench will not interfere with the work.

	Net Weight	
Superior Machine Standards.....	12 lbs. each	\$1.00
Superior Machine Standards, Heavy..	24 lbs. each	1.25

FLOOR MACHINE STANDARD

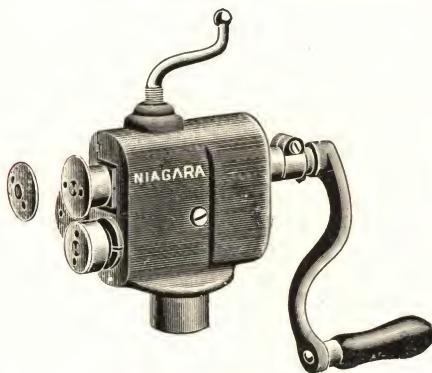
This Standard is desirable for Beading and similar machines operated by belt power. Height 39 inches. Size of socket hole to order.

	Net Weight	
Floor Machine Standard	75 lbs.	\$5.00

**"IMPROVED" MACHINE STANDARD**

The Standard is made with a pivoted head, which enables the operator to obtain any angle of the machine in use. It is very convenient for special work.

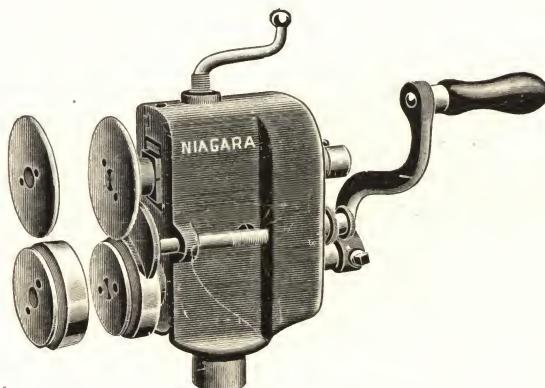
	Net Weight	
Improved Machine Standards....	15 lbs. each	\$....

NIAGARA "SUPERIOR" MACHINES—ENCASED

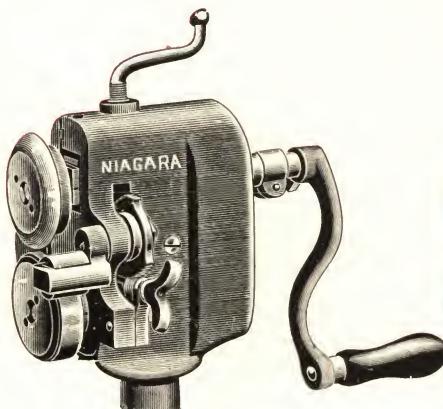
Superior Small Burr



Superior Large Burr



Superior Large Turner



Superior Wiring Machine



Superior Small Turner

NIAGARA "SUPERIOR" MACHINES—ENCASED

The illustrations on page 340 represent the latest improved Tinnery Bench Machines. They are made from new patterns and embody original features.

The Frames or Housings are of modern design, pleasing outlines, and they are extra heavy to insure strength.

The Crank Screw that raises and lowers the upper shaft is in such position that it will not interfere with the work. This screw moves the upper shaft twice as quickly as the crank screw of the ordinary machines.

The Upper Face will go over seams without causing strain or breakage.

The Gauges are made of the best tool steel, and hardened to reduce the wear.

In addition to these new features, the Superior Machines possess all the desirable qualities of our old style Encased Machines, viz: Removable faces, interchangeable parts, adjustment for wear, brass boxes, etc.

		Shipping Weight	With Stand
"Superior" Wiring Machine	38 lbs.	\$14.00	
" Large Turning Machine, with extra upper and lower faces	38 lbs.	11.50	
" Small Turning Machine, with extra upper and lower faces	34 lbs.	11.25	
" Extra Small Turner, diameter of faces same as small burr	28 lbs.	12.00	
" Large Burring Machine, with extra upper face.....	32 lbs.	10.50	
" Small Burring Machine, with extra upper face.....	28 lbs.	10.00	

Without Standard, 75 cents less.

The quick adjusting Superior Standard, shown on page 339, is furnished with these machines, unless the Improved Standard is specially ordered.

Treadle Attachment in place of Crank Screw, extra.....\$4.00
Tight Pulley, extra 3.00

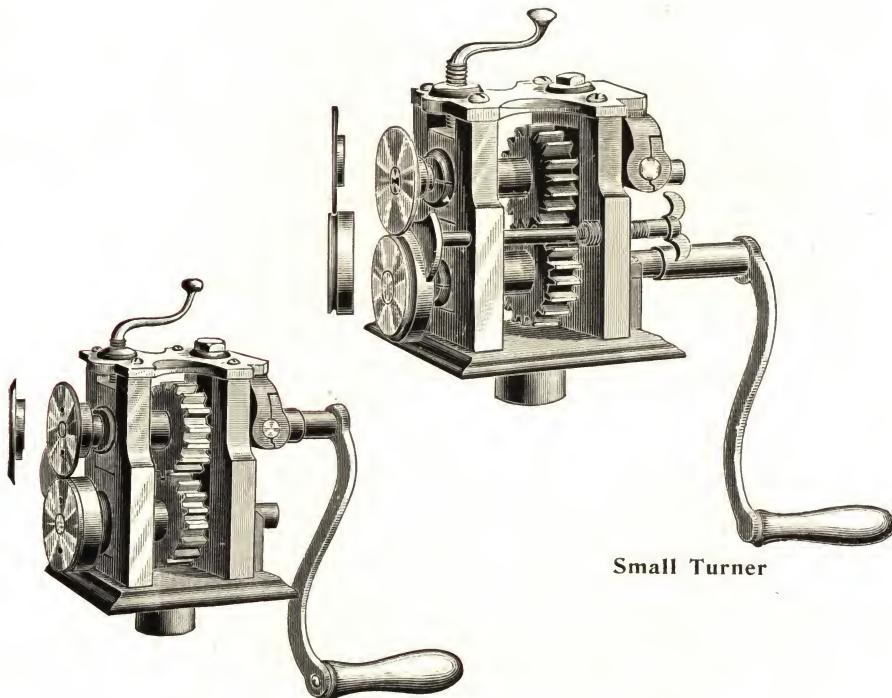
Either the Niagara or the Superior Setting Down Machine can be furnished with this set.

DIRECTIONS FOR ADJUSTING FACES

An adjustable box is used on each machine, by means of which the upper faces can be moved backward or forward to accommodate different thicknesses of tin, or to compensate for the wear of the journals. In adjusting the faces by means of this box, it is only necessary to loosen the screw in the clasp nut H and turn H backward or forward, as the case may require, until the face is brought to the desired place, when the clasp nut should be fastened again by tightening its screw. When the boxes under the lower shaft wear they can be raised by means of the screw No. 3 under the frame A. The machines can be readily taken apart by taking out the screw in center of folder.

The faces of all our Encased and Raymond Machines are removable from the shafts.

RAYMOND'S MACHINES



Large Burr

Small Turner

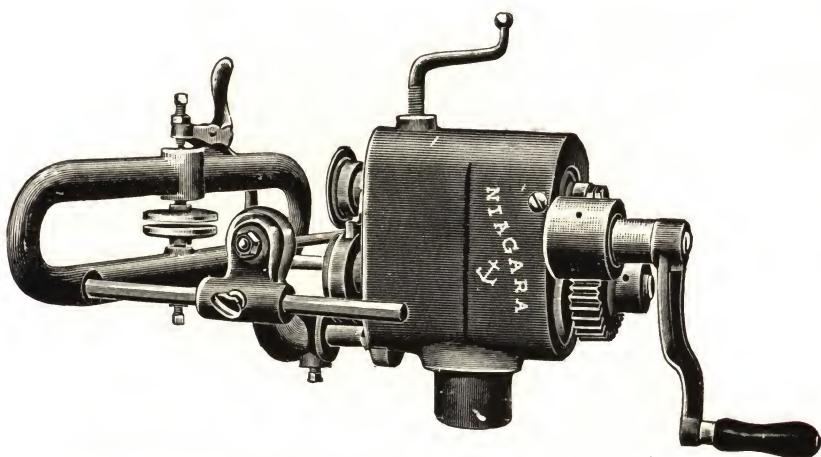
They are intended for the same work as the encased machines. Their construction is more simple, and the gears are not encased. The faces are removable from the shafts. Our Raymond's Machines are furnished with Niagara improved standards.

When ordering parts please give number and name of machine.

	Shipping Weight	With Imp'v'd Stand
Raymond's Wiring Machine.....	37 lbs.	\$12.00
" Large Turning Machine, with extra upper and lower face.	41 lbs.	10.25
" Small Turning Machine, with extra upper and lower face.	34 lbs.	10.00
" Large Burring Machine, with extra upper face.....	33 lbs.	9.00
" Small Burring Machine, with extra upper face.....	30 lbs.	8.50
Extra faces for Wiring Machine, each.....		1.50
Extra faces for Turning and Burring Machine, each.....		1.00

Without standard, 75 cents less.

HEAVY SUPERIOR MACHINES—GEARED



HEAVY SUPERIOR BURR WITH CIRCULAR ATTACHMENT

For No. 20 Iron and Lighter

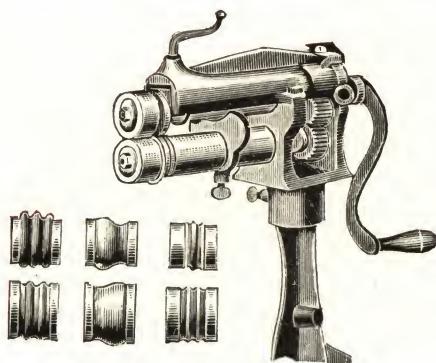
These machines are intended for the same kind of work as the ordinary tinnery bench machines except that, owing to their ample proportions and the back gears, they are suitable for heavier work. They are made either with wiring faces and idler or with turning or burring faces. All are provided with suitable gauges.

	Shipping Weight	With Stand
Heavy Superior wiring machine, geared, with one pair of faces 3 inches diameter.....	105 lbs.	\$24.00
Heavy Superior turning machine, geared, with one pair of faces 3 inches diameter.....	100 lbs.	22.00
Heavy Superior burring machine, geared, with one pair of faces $2\frac{3}{4}$ inches diameter.....	100 lbs.	22.00
A heavy standard, Superior style, page 339, is included in the price.		
Tight pulley, extra.....		4.00
Treadle attachment in place of crank screw, extra.....		5.00
Extra faces, each.....		2.00

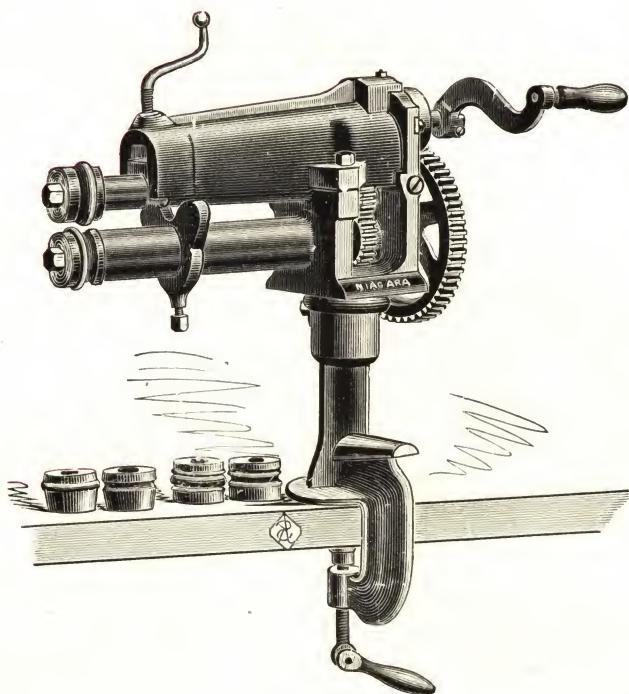
CIRCULAR ATTACHMENT

This attachment, which is shown above in connection with a heavy burring machine, facilitates burring or flanging the edges of round disks. It enables inexperienced operators to do perfect burring work, which otherwise requires experts. A gauge is provided for centering the work. The attachment is suitable for flanging disks from 4 inches to 20 inches diameter.

Circular attachment to heavy Superior burring machines.....\$15.00

NIAGARA BEADING MACHINES

No. 4



No. 2

NIAGARA BEADING MACHINES

Intended for ornamenting and strengthening tinware and other sheet metal goods. Several pairs of rolls of different designs accompany each machine, and rolls with special designs can be made to order.

All the parts of Niagara Beading Machines are made to standard sizes. Any piece can be duplicated by designating the number of the machine and the part wanted.

Nos. 1 and 2—Capacity, No. 20 iron and lighter. Sizes of beads: 1-inch O. G., 1-inch triple, $\frac{3}{8}$ -inch single.

No. 3—Capacity, No. 20 iron and lighter. Sizes of beads: $\frac{7}{8}$ -inch O. G., $\frac{7}{8}$ -inch triple, $\frac{5}{8}$ -inch single.

No. 4—Capacity, No. 26 iron and lighter. Sizes of beads: $\frac{3}{4}$ -inch O. G., $\frac{5}{8}$ -inch triple, $\frac{1}{2}$ -inch triple coffee pot, $\frac{3}{8}$ -inch single.

No. 5—For tin. Sizes of beads: $\frac{5}{8}$ -inch astral, $\frac{7}{8}$ -inch O. G., $\frac{3}{8}$ -inch triple, $\frac{3}{8}$ -inch double, $\frac{1}{8}$ -inch single.

		Throat	Shipping Weight	Price
No. 1	Beader, with 3 pairs of rolls and stand....	13 in.	170 lbs.	\$32.25
No. 2	" 3 " " "	10 in.	160 lbs.	31.25
No. 3	" 3 " " "	7½ in.	100 lbs.	26.25
No. 4	" 4 " " "	6 in.	50 lbs.	19.75
No. 5	" 5 " " "	4 in.	35 lbs.	16.75

Extra Steel Rolls for Nos. 1 and 2, per pair.....	\$3.50
Extra Steel Rolls for No. 3, per pair.....	3.00
Extra Steel Rolls for No. 4, per pair.....	2.00
Extra Steel Rolls for No. 5, per pair.....	1.25
Crimping Rolls to Beaders Nos. 1 and 2, to be used in place of beading rolls per pair	6.00
Crimping Rolls to Beaders No. 3, to be used in place of beading rolls, per pair..	5.00
Crimping Rolls to Beaders No. 4, to be used in place of beading rolls, per pair..	3.50
Crimping Rolls to Beaders, No. 5, to be used in place of beading rolls, per pair..	2.50
Improved Standards for Nos. 1, 2 and 3, each.....	1.25
Improved Standards for Nos. 4 and 5, each.....	1.00

To special order our Beading Machines can be supplied with fixed standard to screw to bench, and T. and L. pulleys, supported by a bracket.

T. and L. pulleys and Fixed Standard to Nos. 1, 2 and 3 Beaders, extra\$12.00
T. and L. pulleys and Fixed Standard to Nos. 4 and 5 Beaders, extra..... 10.00

SPECIAL MACHINES

Our Beading and similar machines can be adapted to a large variety of special work, and we have also a number of other patterns. Prices will be named on receipt of particulars as to work.

No. 0. NIAGARA BEADING MACHINE



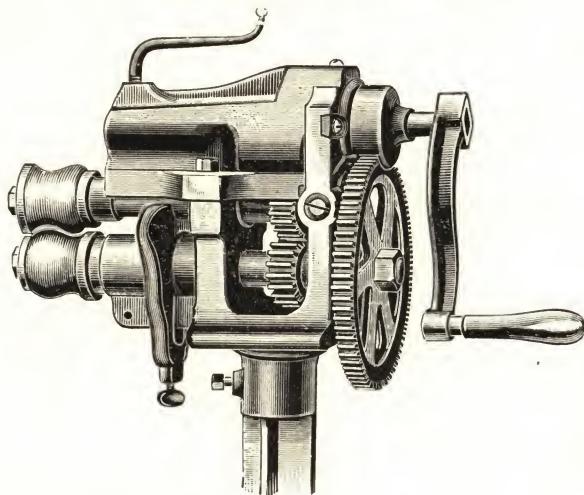
For No. 14 Iron and Lighter

With suitable rolls this machine can be used for beading, corrugating, embossing or flanging sheet iron up to No. 14 gauge, for stove bodies, furnace shells, corrugating the ends of heavy sheet metal drums, powder kegs, and a variety of work requiring heavy material. It will also operate on tin plate, zinc or brass.

Distance from rolls to frame, 10½ inches. Usual rolls have 134-inch O. G.

	Shipping Weight Lbs.	Price
No. 0 Beader on standard, with one pair of O. G. rolls.....	650	\$.....
No. 0 " with T. and L. pulleys.....	700	.....
No. 0 " clutch and T. pulley.....	725	.....
Extra rolls of ordinary size and shape, per pair.....		.....

No. 02½ BEADING MACHINE



Capacity, No. 16 Iron and Lighter

This machine is compact and powerful. It will bead up to 4 inches from the edge of the sheet, and can be supplied with pulleys. One pair of rolls— $2\frac{1}{4}$ inch O. G.—accompanies the machine.

	Shipping Weight	Price
No. 02½ Beader for hand, with Improved Standard.....	135 lbs.	\$30.00
No. 02½ Beader with T. pulley and Improved Standard.....	.....	34.00
No. 02½ Beader with T. and L. pulleys and fixed Standard.....	185 lbs.	42.00
Extra Steel Rolls, per pair.....	.....	5.00

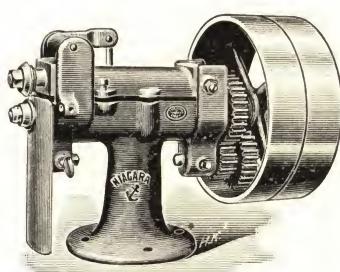
IMPROVED POWER BENCH MACHINES

These machines can be recommended to manufacturers for performing operations, such as are ordinarily done on Tinnery Bench Machines, in large quantities. They are built with a substantial frame and long bearings, and provided with T. & L. pulleys.

They are now made direct-acting with pulleys on lower shaft instead of back geared as shown in cut.

The working faces and gauges are not included in the price. They are made to suit the nature of the work for which a machine may be intended, such as turning, burring, crimping, beading, etc.

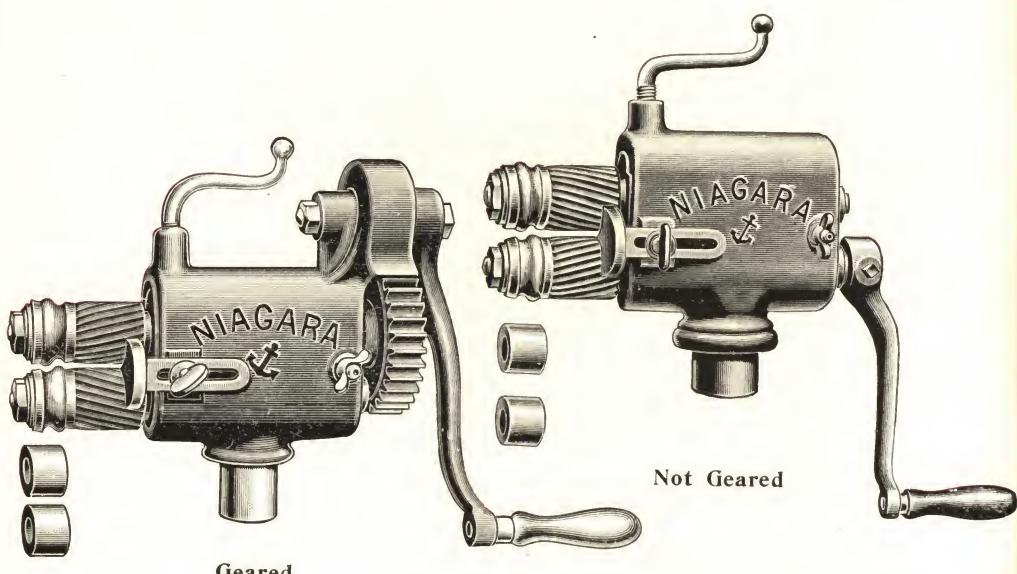
The pitch diameter is $1\frac{1}{8}$ inches; size of T. and L. Pulleys, $12 \times 2\frac{1}{4}$ inches.



	Shipping Weight	Price
No. 6 Power Bench Machine, with treadle attachment.....	100 lbs.	\$.....
No. 7 Power Bench Machine, with treadle attachment.....	125 lbs.	.....
No. 8 Power Bench Machine, with treadle attachment.....	200 lbs.	.....

Machines do not include working parts.

IMPROVED NIAGARA CRIMPER AND BEADER



Capacity, No. 24 Iron

This machine is of modern design and intended to facilitate putting together sheet metal pipe. The rolls crimp and contract the end of the pipe so that the lengths are easily put together. The material is beaded at the same time.

ADJUSTMENT

Our new Crimper and Beader possesses the advantage that the relative depth of the crimp and bead can be regulated quickly and with ease, *i. e.*, a distinct crimp can be made in connection with a shallow bead, or *vice versa*, or both can be made uniform. This adjustment is made by means of two wing nuts, near the handle. By loosening the one and tightening the other, the upper shaft is tipped either towards the front or towards the handle, as may be desired.

The crimping and beading rolls are made of steel and hardened. The gears are machine cut of steel, and all parts interchangeable. We furnish a pair of plain collars to take the place of the beading rolls when crimping only is to be done.

When ordering parts, state the factory number of the machine.

The direct acting machine works faster, the geared one is easier to operate.

	Ship- ping Weight Lbs	Price
Niagara Crimper and Beader, with standard.....	45	\$12.00
Niagara Crimper and Beader, with standard and treadle attachment in place of crank screw.....	16.00	3.00
Crimping rolls, per pair.....	.....	2.50
Beading rolls, per pair.....	.....	1.50
Plain collars, per pair.....	.....	.....

Rolls with spiral crimp as above are sent along, unless rolls with straight crimp are ordered.

HEAVY NIAGARA CRIMPER AND BEADER—GEARED



For No. 20 Iron and Lighter

The frame and other parts of these machines are made extra heavy, and the machine is back geared to permit of crimping and beading heavy metal.

The crimping and beading rolls are made of steel and hardened.

The connecting gears are cut of steel, and adjustment is provided to regulate the relative depths of the crimp and bead. By loosening one of the wing nuts shown at the handle end of the frame and tightening the other, the upper shaft is tipped either towards the front or towards the back, as may be desired. In this manner the operator can produce a distinct crimp in connection with a shallow bead, or *vice versa*, or both can be made of uniform depth.

The price includes a pair of plain collars to take the place of the beading rolls when crimping only is to be done.

	Shipping Weight Lbs.	Price
Heavy Niagara Crimper and Beader with stand.....	120	\$28.00
Heavy Cornice Makers' Crimper for No. 20.....	120	28.00
Crimping rolls, per pair.....		6.00
Beading rolls, per pair.....		4.00
Plain collars, per pair.....		2.00
Tight pulley, extra		4.00
Treadle attachment in place of crank screw, extra.....		5.50

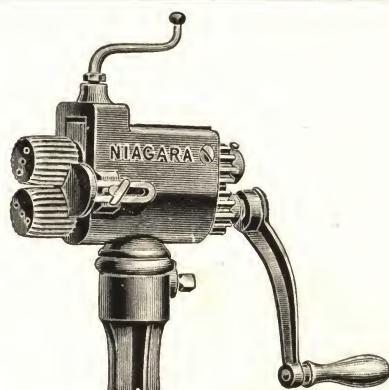
CORNICE MAKERS' CRIMPER

Capacity, No. 24 Iron

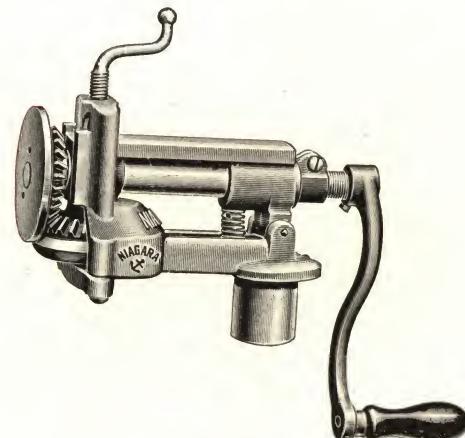
On this machine which is now made off the patterns of the Improved Niagara Crimper and Beader, page 348, the shafts do not extend beyond the end surface of the crimping rolls. This enables the operator to crimp close up to a bend.

The connecting gears are of steel.

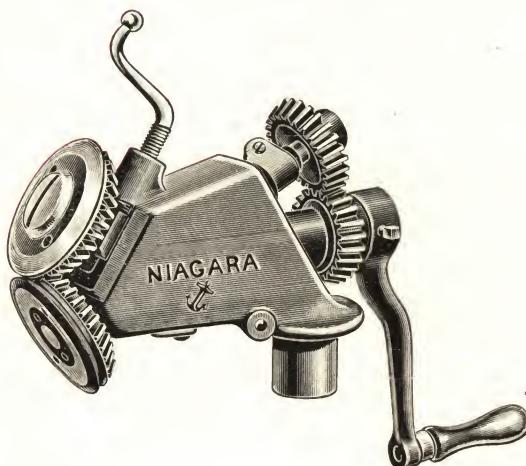
Cornice Makers' Crimper with stand; shipping weight, 40 lbs.....	\$12.00
Treadle attachment in place of crank screw, extra	4.00



SETTING DOWN MACHINES



NIAGARA



SUPERIOR

These machines follow the burring machines and press the edge of the bottom on to the flange of body of cans and similar work.

Superior—Possesses the advantage that the operator can start the seam inward while setting it down, thereby facilitating the operation of double seaming. The work can be held up or down.

	Shipping Weight	With Stand
Superior setting down machine for seams up to $\frac{3}{8}$ wide.....	35 lbs.	\$ 9.75
Niagara setting down machine for seams up to $\frac{3}{8}$ wide.....	28 lbs.	9.75
Niagara setting down machine, extra heavy, for seam $\frac{3}{8}$ -inch wide.	33 lbs.	11.00

Without standard, 75 cents less.

SUPERIOR SETTING DOWN MACHINE—GEARED

The inclined position of both faces enables the operator to start the seam inward while setting it down, thereby facilitating the succeeding operation of double seaming. The machine is back-geared and heavily constructed. An adjustable gauge is provided to suit seams of different widths up to one-fourth. The machine fits our heavy Superior Standard.

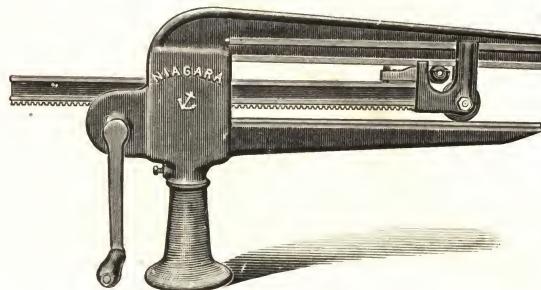
	Shipping Weight	Price
Heavy Superior Setting Down Machine, back-geared, with standard for No. 20 iron and lighter	100 lbs.	\$22.00
Extra faces, each.....		3.00
Power Setting Down Machine, with friction clutch and pulley, for No. 18 iron and lighter, adjustable up to $\frac{1}{2}$ inch.....	140 lbs.	90.00

TUCKING OR CONTRACTING MACHINE

This machine is frequently used in canning and tinware factories. It is intended for contracting inward or swaging outward the top or bottom edges of can bodies, etc.

	Shipping Weight	Price
Tucking or Contracting Machine with improved standard.....	30 lbs.	\$12.00

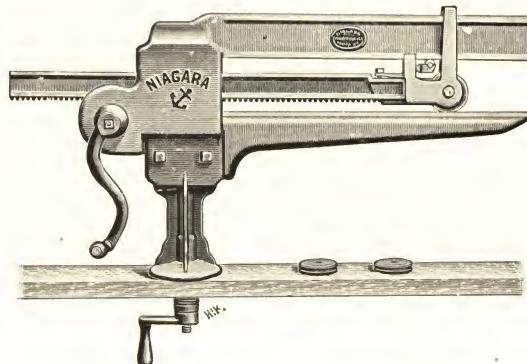
BUFFALO GROOVER



This machine is of neat and modern design. The anti-friction roller that receives the upward pressure runs in an oil bath. After loosening the set screw near the handle the machine can be turned in any desired direction, and the operator is not compelled to unscrew the standard below the table. Three grooved rolls, $\frac{5}{8}$, $\frac{3}{8}$ and $\frac{1}{4}$ -inch, are sent along.

20-inch Buffalo Groover; shipping weight, 100 lbs.....\$13.50

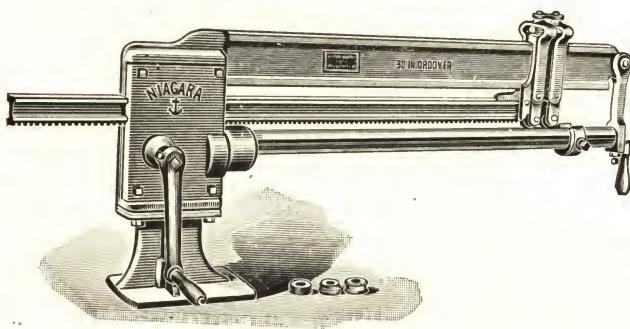
STOW'S BRASS-MOUNTED GROOVER



This Groover is supplied with three grooved rolls, $\frac{5}{8}$, $\frac{3}{8}$ and $\frac{1}{4}$ -inch wide.

	Shipping Weight	Price
17-inch Stow's Groover, with stand.....	94 lbs.	\$11.00
20-inch Stow's Groover, with stand.....	100 lbs.	\$13.50

No. 2. NIAGARA GROOVER



Capacity, No. 24 Iron and Lighter

The reversible horn of this machine permits of grooving 2 inches diameter and larger. By using the flat rolls and pressing the seam into one of the grooves planed into the horn, the seam can be grooved towards the inside of the work.

No. 2 Niagara Groover is arranged for grooving and flattening the seam while the rack with rolls moves over the work once and returns to its original position. The grooving roll is in action on the way forward, and the flattening roll on the return trip, the change taking place automatically. In this manner the work and strain on the machine are divided, without loss of time. A stop is provided on the horn.

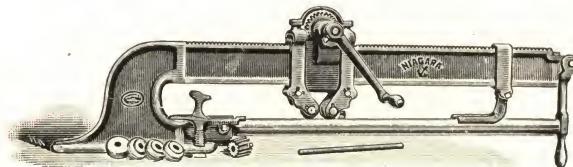
To special order, Niagara Groovers can be arranged for work smaller than 2 inches diameter.

Price includes two flat and three grooved rolls, with grooves $\frac{5}{8}$, $\frac{1}{4}$ and $\frac{1}{2}$ -inch wide.

Width of grooves in round horn— $\frac{5}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ -inch.

		Shipping Weight, Lbs.	Price
17-inch No. 2 Niagara groover, with standard.....		160	\$18.00
20-inch " " "		170	20.00
30-inch " " "		195	25.00
36-inch " " "		215	30.00

QUEEN CITY GROOVERS



Round Horn

Capacity, No. 24 Iron and Lighter

These excellent Groovers are of modern design. The seam is grooved and flattened while the carriage with rolls moves over the rolls once and returns to its original position. The grooving roll is in action on the way forward, and the flattening roll on the return trip, the change taking place automatically. In this manner the work and strain on the machine are divided, without loss of time. The seam is perfect in tightness and appearance. A clamp holds the work at the starting end, and there is a hinged stop at the other end. A guide attached to the carriage holds the folded edge in position laterally. The upward pressure is taken up by anti-friction rolls, to insure easy running.

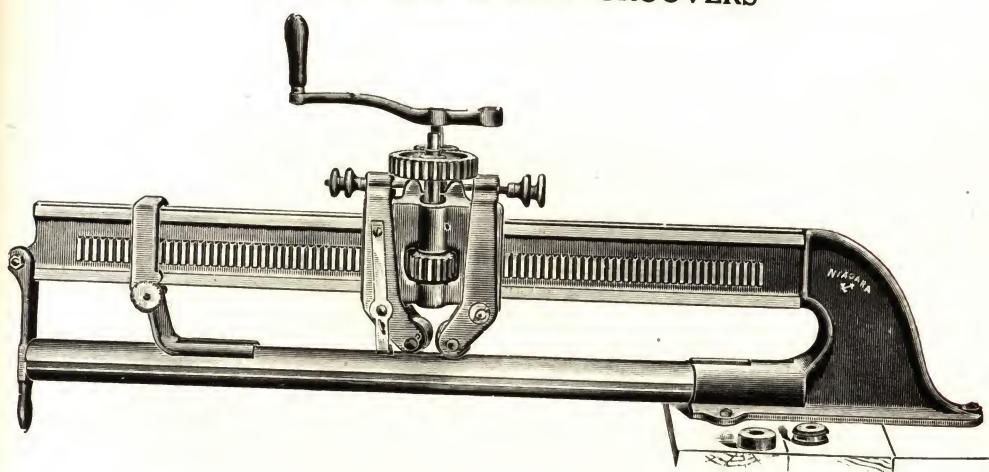
Easy and rapid adjustment is provided to accommodate various thicknesses of material, and to regulate the tightness of the seam. The device used for this purpose is elastic to allow for small variations in the thickness of the stock. The adjustment can be made instantly and locked in position.

To facilitate heavy work and to increase the speed on light work, the machine is geared for two speeds, and it can be run still faster by using a push rod on the carriage. The crank handle can be used on either side of the frame.

The groover with square horn, which is cast in one piece with the frame, will take in work not less than $2\frac{1}{8}$ -inch diameter; with round horn it is suitable for work 2 inches diameter and larger, and for inside as well as outside seaming.

Four grooved rolls ($\frac{3}{16}$, $\frac{5}{16}$, $\frac{7}{16}$, $\frac{9}{16}$) and two flattening rolls are sent along. The round horn has grooves of the same width as the rolls.

	Shipping Weight	Price
32-inch Queen City Groover, with square horn.....	155 lbs.	\$26.00
32-inch Queen City Groover, with round horn.....	170 lbs.	30.00

HEAVY QUEEN CITY GROOVERS**Geared**

This Groover is intended for heavy work. The traveling carriage has two rolls, one for grooving, followed by a flattening roll which tightens the seam. The seam is grooved on the way forward and flattened on the return trip.

The two wheels can be adjusted independently, according to the thickness of material, adjustment being made by means of the hand wheels at the upper end of the sliding carriage. The bar with the rack carries a hinged stop, which prevents the work from slipping off the mandrel while being grooved, and a guide attached to the carriage holds the folded edge in position laterally. The upward pressure of the carriage when in operation is taken up by anti-friction rollers. There are several grooves planed into the round mandrel which are used for grooving the seam toward the inside of the work.

The machine is so arranged that it can be run direct, instead of geared, when light material is being grooved and speed is desired.

36-inch, for No. 20 iron and lighter, horn $2\frac{3}{4}$ inches diameter.

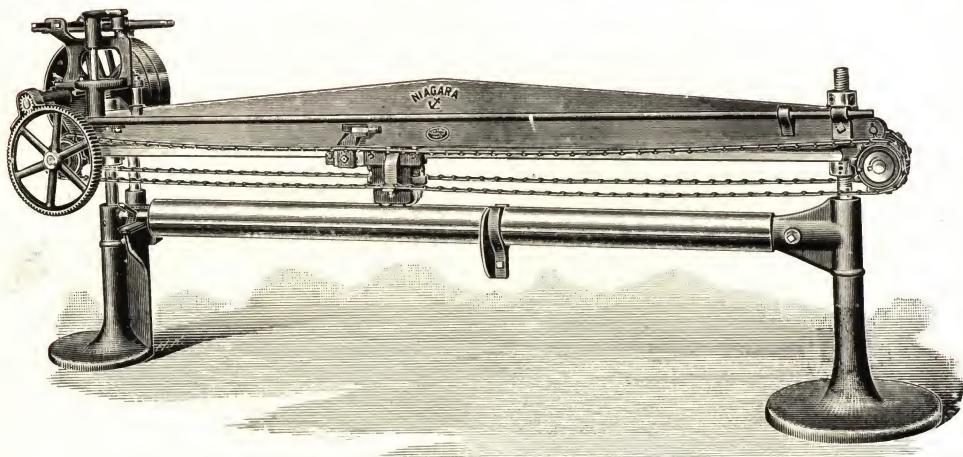
48-inch, geared, for No. 20 iron and lighter, horn $3\frac{1}{4}$ inches diameter.

To special order the horn can be made of smaller diameter, which will reduce the capacity.

Three grooved rolls ($\frac{5}{8}$, $\frac{7}{8}$ and $\frac{9}{8}$) and two flattening rolls are included in the price.

	Shipping Weight	Price
36-inch Heavy Queen City Groover, geared.....	345 lbs.	\$.....
48-inch Heavy Queen City Groover, geared.....	440 lbs.	.....

NIAGARA GIANT GROOVERS, FOR POWER



Capacity, No. 20 Iron and Lighter

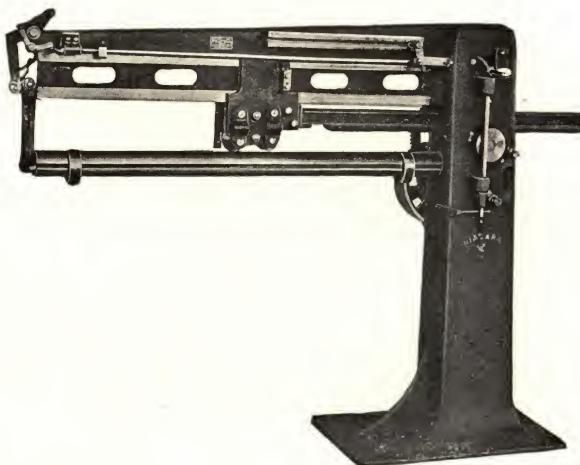
These machines are intended for grooving and flattening the longitudinal seams of long cylinders. The crosshead is carried by two standards with screws that permit of regulating the distance between the crosshead and the upper surface of the grooving mandrel to suit the diameter of the latter. In order to enable the operator to get the work in and out of position, the grooving mandrel is pivoted at the one end so that the other end can be swung outward. The mandrel is made of heavy steel tubing, to avoid undue weight. The machine is back-gearred, the gears being machine cut, and driven by open and cross belts. The back gear shaft carries two sprocket wheels which drive sprocket chains, one on each side, connected with the grooving carriage. The latter is guided by a "V" slide on the crosshead. It stops automatically when at the driving end, and reverses automatically at the other end. The position of the reversing stop and of the apron gauge on the horn can be changed for longer or shorter stroke, according to the length of the work. Adjustment is provided to take up wear.

The traveling carriage has two rolls, one for grooving, and the other for flattening. The grooving roll acts on the way forward, and the flattening roll on the return trip, thereby dividing the strain. Both rolls are adjustable according to the thickness of the material. The grooving mandrel has a flat surface and several grooves. For outside seaming the flat surface is turned upward, and a grooved roll is used on the carriage besides the flattening roll. In order to enable the operator to put the seam towards the inside, one of the grooves is brought in the upper position, and flat rolls only are used on the carriage to press the seam into the groove.

Speed of carriage about 50 feet per minute.

Three grooved rolls, $\frac{5}{8}$, $\frac{7}{8}$, $\frac{3}{2}$ -inch, and 2 flattening rolls accompany the machine, and grooves of the same widths are planed into the mandrel.

	Diameter of Horn	Shipping Weight	Price
6-ft. Giant Groover, for power.....	4 inches	2000 lbs.	\$.....
8-ft. " " "	5 inches	2250 lbs.	.....
10-ft. " " "	6 inches	2500 lbs.	.....

NIAGARA HEAVY POWER GROOVER**Capacity, No. 20 Iron and Lighter**

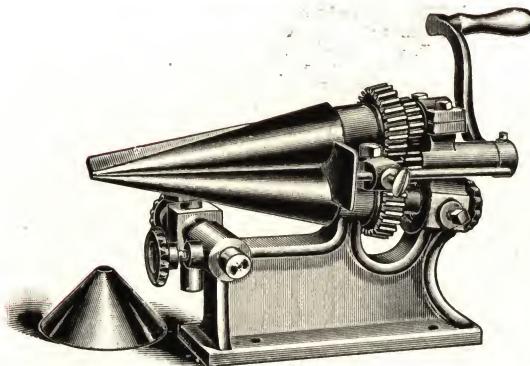
Intended for grooving and flattening the longitudinal seams of sheet metal cylinders up to 36 inches long. The traveling carriage, which is actuated by rack and pinion, carries two rolls, one of them for grooving the seam on the way forward, and the other for flattening it on the return trip. The carriage is started on its way forward by closing the end latch and its motion can be stopped at any point. The grooving horn is $3\frac{3}{8}$ inches diameter and reversible, so that either a flat surface, or one of the grooves that are planed into the horn can be turned upward. When the seam is to be towards the outside of the work, a roll with groover of the proper width is used on the carriage, and for inside seaming a flat roll presses the seam into one of the grooves of the horn.

The grooving and flattening rolls can be adjusted independently by means of eccentrics, to suit the thickness of material and the desired tightness of the seam. A stop is provided at the outer end to prevent the work from slipping off the horn while being grooved. This stop is adjustable for work of various lengths. A guide is attached to the traveling carriage to hold the lock in position laterally.

Rolls with grooves $\frac{5}{8}$, $\frac{7}{8}$ and $\frac{9}{8}$ inches wide and 2 flattening rolls are usually furnished.

	Shipping Weight	Price
36-inch Heavy Power Groover.....	1250 lbs.	\$.....

FUNNEL FORMER

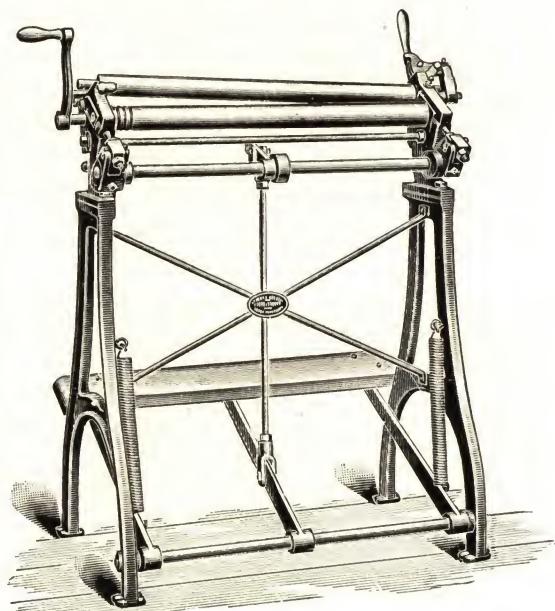


Especially adapted to forming conical and taper work of various angles, that cannot be produced on ordinary forming rolls, such as funnels, can tops, lamp shades, etc. The work is more uniform and better than when made by hand. The third or forming roll is adjustable to all positions. Length of rolls, 10 inches.

	Shipping Weight	Price
Funnel Former with treadle attachment for upper roll.....	90 lbs.	\$34.00

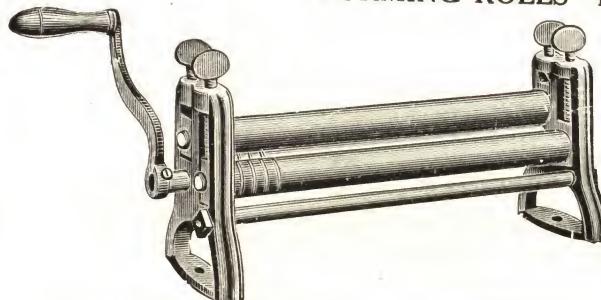
SLIP ROLL FORMER FOR OVAL WORK

In addition to forming round cylinders, this machine is adapted to forming oval, oblong and irregular shapes. The back or forming roll can be raised and lowered instantly to any desired position by means of the foot treadle attachment. The operator is left with both hands free to handle the sheet. Adjustable stops are provided to fix the highest and lowest position of the forming roll, according to the curve desired. The upper roll has a device for raising its one end and holding it suspended while slipping off the work.



	Shipping Weight	Price
Slip Roll Former for oval work, rolls 2 x 30 inches.....	325 lbs.	\$35.00

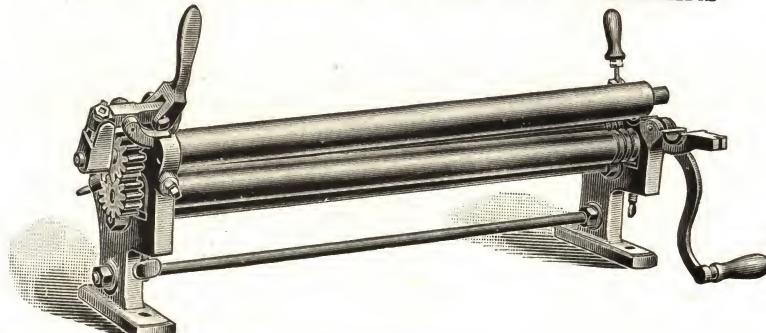
FORMING ROLLS—PLAIN



For forming light sheet metal into cylindrical shape, such as tin pipe, can bodies, stove pipe, etc. The rolls are of steel, finely finished, and free from indentations and imperfections. Our Formers with rolls 1 and 1½-inch diameter have brass gears; larger sizes have steel gears.

	Diameter	Length	Shipping Weight	Price
Tin Pipe Former.....	1½ inches	16 inches	62 lbs.	\$ 9.00
" "	1½ inches	20 inches	70 lbs.	10.00
Stove Pipe "	1¾ inches	30 inches	118 lbs.	18.00
" "	2 inches	30 inches	140 lbs.	19.00
Can Body "	2 inches	37 inches	160 lbs.	22.00
Forming Rolls	2½ inches	40 inches	170 lbs.	24.00
" "	2½ inches	30 inches	225 lbs.	38.00
" "	2½ inches	37 inches	250 lbs.	43.00
	2½ inches	42 inches	275 lbs.	48.00

SLIP ROLL STOVE AND TIN PIPE FORMERS

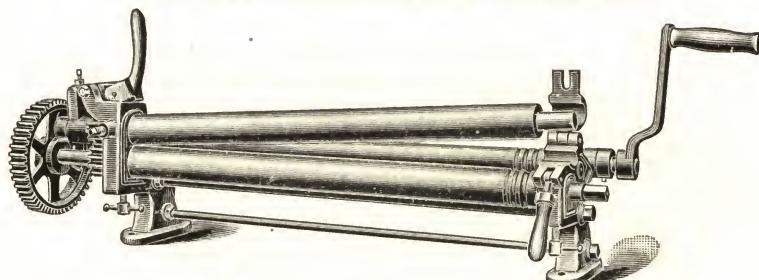


With simple and quick acting mechanism for lifting the one end of the upper roll and holding it suspended while work that has been formed around it is being removed.

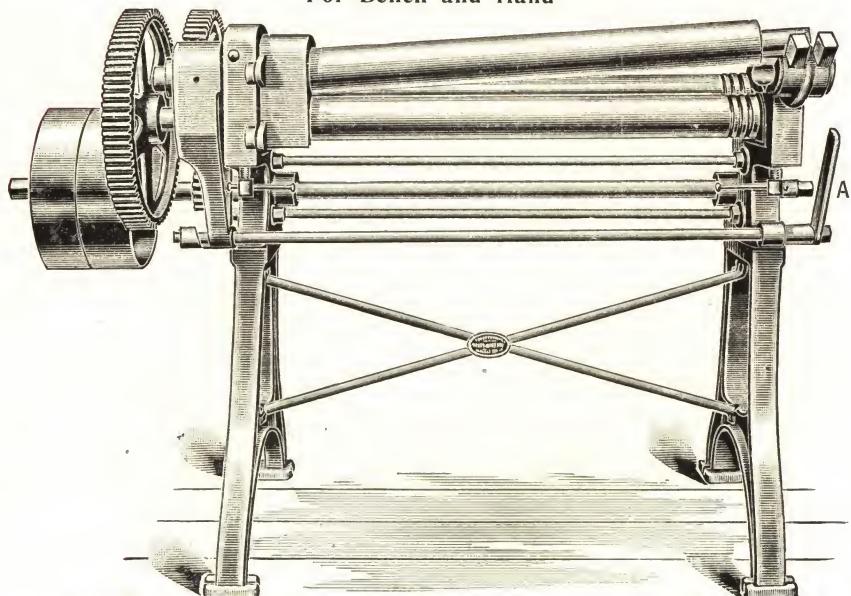
	Diameter	Length	Shipping Weight	Price
Slip Roll Former.....	1 inch	12 inches	40 lbs.	\$12.00
" "	1 inch	14 inches	42 lbs.	14.00
" "	1 inch	20 inches	50 lbs.	16.00
" "	1½ inches	16 inches	70 lbs.	10.00
" "	1½ inches	20 inches	80 lbs.	11.00
" "	1¾ inches	30 inches	140 lbs.	19.00
" "	2 inches	30 inches	160 lbs.	20.00
" "	2 inches	37 inches	185 lbs.	23.00

Iron legs for Tin and Stove Pipe Former, extra..... \$7.00
T. and L. pulleys for Tin and Stove Pipe Former, extra..... 8.00

**NIAGARA SLIP ROLL FORMING MACHINES
WITH LIFTING DEVICE FOR UPPER ROLL**



**3 x 36-INCH SLIP ROLLS, SINGLE BACK GEARED
For Bench and Hand**



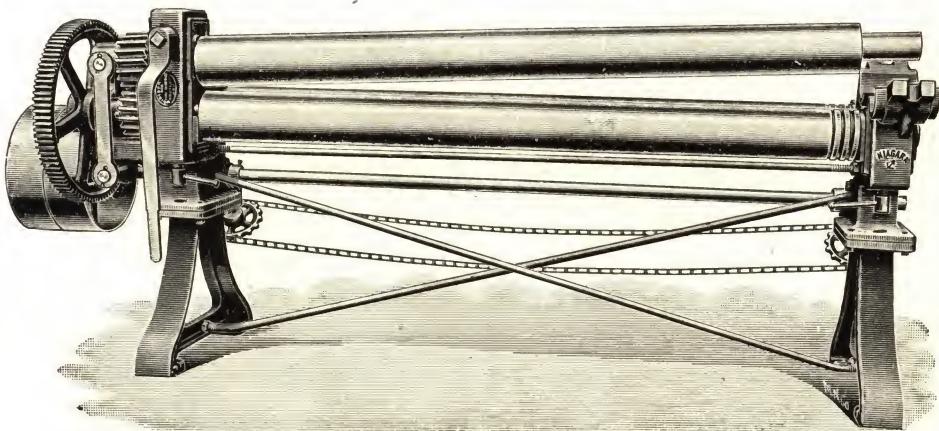
**4 x 36-INCH SLIP ROLLS, DOUBLE BACK GEARED, ON LEGS
For Hand and Power**

Our Slip Roll Formers are of substantial construction and well fitted. The rolls are of steel. They have a quick-acting device for raising one end of the upper roll and holding it up while the operator is removing the work sideways. This device is particularly required when removing work of small diameter.

On rolls $3\frac{1}{2}$ inches diameter and smaller, the one end of the upper roll is lifted by raising the eccentric lever, shown on top of the left-hand housing of the 3-inch slip roll, illustrated above. On Formers 4 inches diameter and larger, the end of the upper roll is lifted by making a half turn with the handle "A," shown on cut of the 4-inch rolls above. 5 and 6-inch rolls have the raising lever at the left-hand side, as per illustration, page 361.

Our Slip Roll Formers are furnished either for bench, or on iron legs. They are arranged to work direct or with single or double back gear. When hand driven, single back-gearred Slip Roll Formers can be run direct, and double back geared machines can be driven from the first gear shaft. Double friction clutch pulley for reversing motion can be applied instead of T. and L. pulleys, at proper difference in price. It enables the operator to control the direction in which the rolls revolve. He can let the stock run from the front rolls towards the back or forming roll, and then by moving one lever reverse the rolls so that the stock will be returned to the original position. By moving the same lever the machine can be stopped quickly.

**NIAGARA SLIP ROLL FORMING MACHINES
WITH LIFTING DEVICE FOR UPPER ROLL**



6 x 96-INCH D. B. GEARED, ON IRON LEGS, WITH T. AND L. PULLEYS

Size of Rolls		Plain For Bench and Hand		Single Back-Geared For Bench and Hand		Double Back-Geared For Bench and Hand		
Diam.	Length	Shipping Weight	Price	Shipping Weight	Price	Shipping Weight	Price	Will Form
2½	30	300 lbs.	\$.....	340 lbs.	\$.....	.....	\$.....	...
2½	36	330 lbs.	.....	380 lbs.	.....	.....	.....	...
3	30	380 lbs.	.....	435 lbs.	.....	500 lbs.	.....	No. 13
3	36	450 lbs.	.....	475 lbs.	.....	550 lbs.	.....	No. 14
3	42	475 lbs.	.....	515 lbs.	.....	600 lbs.	.....	No. 15
3	48	550 lbs.	.....	575 lbs.	.....	650 lbs.	.....	No. 16
3½	30	.....	.....	670 lbs.	.....	700 lbs.	.....	No. 11
3½	36	.....	.....	730 lbs.	.....	765 lbs.	.....	No. 12
3½	42	.....	.....	790 lbs.	.....	825 lbs.	.....	No. 13
4	36	.....	.....	.....	.....	1500 lbs.	.....	No. 10
4	42	.....	.....	.....	.....	1600 lbs.	.....	No. 11
4	48	.....	.....	.....	.....	1675 lbs.	.....	No. 12
4½	36	.....	.....	.....	.....	1600 lbs.	.....	No. 8
5	36	.....	.....	.....	.....	1950 lbs.	.....	No. 6
6	36	.....	.....	.....	.....	2850 lbs.	.....	" 3/8-in.

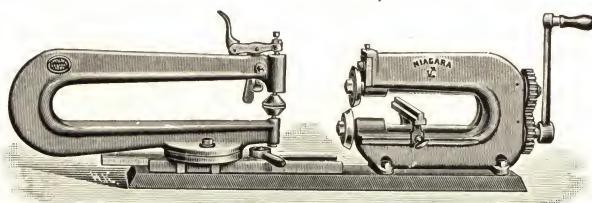
Use single back-gear on 2½ to 3½-inch rolls to form No. 16 easily; double back-gear to form No. 14, long lengths, to small circle. 3-inch and longer rolls should be back-geared; 4-inch and larger rolls must be set on legs.

EXTRAS

Rolls, inches	2½	3	3½	4	4½	5	6
T. and L. pulleys, extra	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00	\$10.00	\$14.00
Double friction clutch pulleys, extra .....	.....	.....	.....	.....	.....	75.00	80.00
Iron legs, extra	6.00	7.00	8.00	....	....	2.50	3.50
Additional length, extra, per inch. ....	.80	1.00	1.50	1.75	2.00	2.50	3.50

For prices of smaller slip rolls refer to page 359. Prices of longer and heavier rolls will be given on application.

NIAGARA WAUGH'S CIRCLE SHEARS

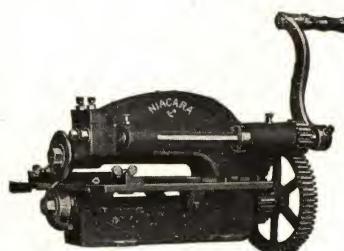


These Shears will cut round blanks of sheet metal, and they can also be used for straight cutting. The cutters are always set ready for use. The circle arm can be quickly moved to any desired position, and fastened there. There is a scale marked on the bed, according to which the circle arm can be adjusted for the diameter of the circle to be cut. The material is clamped between the disks by means of a quick acting eccentric lever, which always exerts the same pressure. Adjustment is provided for wear of the cutters, and we furnish a slitting gauge and one drop gauge, to give the proper position of the blank between the disks.

	Capacity	Will Circle	Depth of Cutting Head	Shipping Weight	Price
No. 1 Waugh's Circle Shears....	No. 22	3 to 15 in.	9 $\frac{3}{4}$ in.	100 lbs.	\$33.00
No. 2 " " "	No. 22	3 to 20 in.	9 $\frac{3}{4}$ in.	110 lbs.	38.00
No. 4 " " "	No. 22	3 $\frac{1}{2}$ to 48 in.	9 $\frac{3}{4}$ in.	310 lbs.	65.00
No. 5 " " "	No. 18	4 to 48 in.	13 $\frac{1}{2}$ in.	385 lbs.	80.00

No. 5 is back geared.

Extra Cutters for Nos. 1 to 4, per pair..... \$ 5.00
Extra Cutters for No. 5, per pair..... 12.00

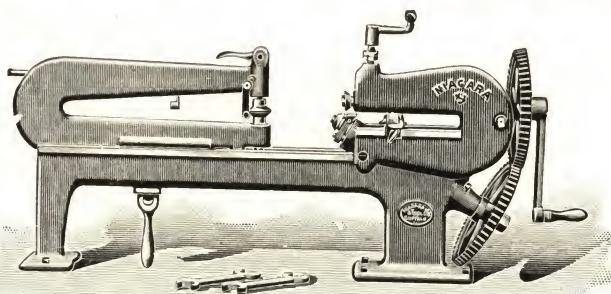


NIAGARA ROTARY SLITTING SHEARS

These are the cutting heads of the Niagara Waugh's Circle Shears, without the bed and circle arm. They are furnished to bolt to the bench.

	Capacity	Depth of Throat	Shipping Weight	Price
No. 2.....	No. 22 iron	to gauge 8 $\frac{1}{2}$ in., to frame 9 $\frac{3}{4}$ in.	100 lbs.	\$22.00
No. 5, geared..	No. 18 iron	to gauge 12 in., to frame 13 $\frac{1}{2}$ in.	240 lbs.	55.00

NIAGARA RING AND CIRCLE SHEARS, IMPROVED



Capacity, No. 22 Iron and Lighter

This machine is suitable for cutting internal circles or holes without cutting through the edge of the sheet, besides outside cutting. The sizes of internal circles that can be cut into a given blank depend upon the size and shape of the blank and the depth of throat in cutting head and circle arm.

The circle arm can be quickly moved to any desired position, and fastened there. There is a scale marked on the bed, according to which the circle arm can be adjusted for the diameter of the circle to be cut. The material is clamped between the disks by means of a quick acting eccentric lever, which always exerts the same pressure. Adjustment is provided for the wear of the cutters, and we furnish a slitting gauge and two drop gauges, to give the proper position of the blank between the disks.

Nos.	11	13
Depth of throat in cutting head.....inches	9	9
Depth of throat in circle arm.....inches	16	30
Will circle from.....inches	3½ to 22	3½ to 40
Niagara ring and circle shears, for hand.....	\$.....	\$.....
Shipping weight	180	250
Extra cutters	Per pair	\$.....

DUPLEX ROTARY SLITTING SHEARS



This machine is intended for cutting apart or trimming sheets of any length, No. 24 gauge and lighter, up to 30 inches wide. The cutters are carried by holders that are fastened to the upper and lower part of the frame independent of the shafts. The distance between the cutters can be adjusted from 3½ to 30½ inches. The crosshead that carries the upper cutters can be lowered to permit of taking up wear on the cutters.

This machine is to be sunk into a bench with the upper surface of the lower cutter flush with the surface of the bench. At right angle to the machine gauges can be provided to suit the work. We do not include these gauges, as the user can readily make them himself of angle iron or sheet metal according to the circumstances. One of the gauges should be stationary, the other adjustable.

	Shipping Weight	Price
Duplex rotary slitting shears.....	325 lbs.	\$.....

THE "RAPID" SLITTING SHEAR

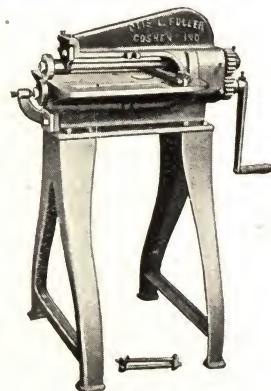
A Time Saver. A Money Saver

For Cutting Sheet Metal of Any Length

Just the machine for cornice makers, tinners and all sheet metal workers.

Cuts iron for ridge roll, valleys, gutter, cornice, skylight bars, etc.

Faster and cheaper than any other machine. Cuts large circles and elbows (to line) from heavy material in one-quarter the time same work can be done with snips, and much better.



No. 1

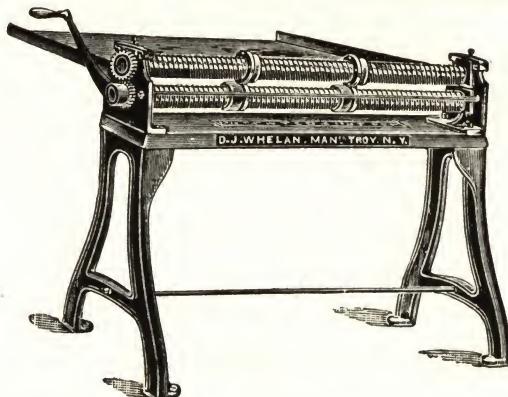
The Rapid Slitting Shear is made in two sizes. The No. 1 or smaller machine has capacity for cutting 16 gauge material and lighter, while the No. 2 shear is built about 100 pounds heavier, geared 2 to 1, equipped with bevel cutters and will cut 14 gauge material and lighter.

Prices

No. 1	\$50.00
No. 2	60.00

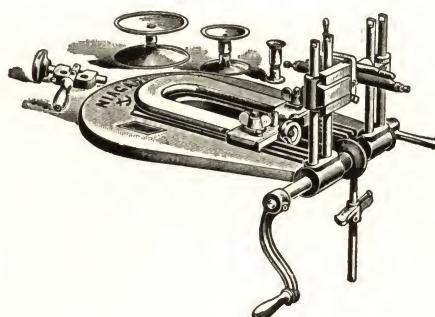
F. O. B., Cleveland.

"THE CAPITAL" ROTARY SLITTING SHEARS



This machine is designed to do the work of the large and expensive squaring and slitting shears, for slitting sheet metal for making gutters or any other purpose where long or short lengths are required; cutting a whole sheet 36 inches wide at once into strips of any desired width. The cutters are adjustable to wear, and by loosening the screws that hold them to the shaft, they may be adjusted to any width desired, or so that only one pair is in operation at a time, it not being necessary to remove any of the cutters not in use. The cutters have two cutting edges; when one becomes dull a new cutting edge can be easily obtained by removing the screws and reversing disk. Extra cutters furnished if desired.

They will cut No. 20 iron and lighter. Write for price.

BUFFALO CIRCLE SHEARS AND EDGER

Will cut circles of any size from $2\frac{1}{2}$ to 23 inches diameter, of tin or light sheet metal.

The entire circumference is cut at one turn of the crank handle. After cutting the circles they are flanged by means of the Edge Turner or Burring Attachment, at the same setting. The flange can be up $\frac{1}{8}$ -inch high.

The Edge Turner permits of flanging circles from 3 to 11 inches diameter. The edge can be turned at right angle. An extra pair of clamping disks is required for each diameter to be edged.

The Burring Attachment allows of turning an edge on circles from 5 to 22 inches diameter beyond the right angle without using special clamping disks for each diameter. Circles to be burred must be at least $1\frac{3}{4}$ -inch larger than the clamping disk.

A yoke unites both cutter stocks, that, when once adjusted, the cutters do not require to be readjusted for circles of different diameters. The clamping of the sheet is done by means of an eccentric lever which gives more positive and uniform pressure than the treadle attachment used formerly.

There is a graduated scale marked on the frame to facilitate setting the cutters according to the diameter wanted, and a gauge permits of centering the blank properly.

The price includes four disks, $1\frac{1}{8}$, 3, $4\frac{1}{8}$ and $7\frac{5}{8}$ inches diameter. The Edge Turner and Burring Attachment are not furnished with the Buffalo Shears, unless ordered.

	Shipping • Weight Lbs.	Price
Buffalo Circle Shears, with Burring Attachment and Edge Turner..	145	\$35.00
" " " " Edge Turner only.....	.....	30.00
" " " " Burring Attachment only.....	.....	30.00
" " " " for cutting only.....	.....	25.00
Iron legs, extra	100	7.50
Extra clamping disks not over 8 inches diameter, per pair.....	.....	2.00
Cutters, per pair.....	.....	3.00

EXCELSIOR SQUARING SHEARS—IMPROVED



These shears are accurate, durable, and well adapted to the ordinary work of tinsmiths, etc. They work easily, and no more pressure is required when the treadle is nearly down than at the beginning of the stroke.

The side legs and guides for the upper knife are cast in one piece, thus securing rigid bearings for the cutter bar. The bed is marked with a graduated scale in $\frac{1}{8}$ inches, and a wrench to take out and replace the knives is sent with each machine.

Adjustment is provided for wear of the knives and guides. Our shear knives are made of high-grade materials, carefully hardened and ground on automatic machines, which makes them true in cutting edge and seat, to assure a perfect fit without backing.

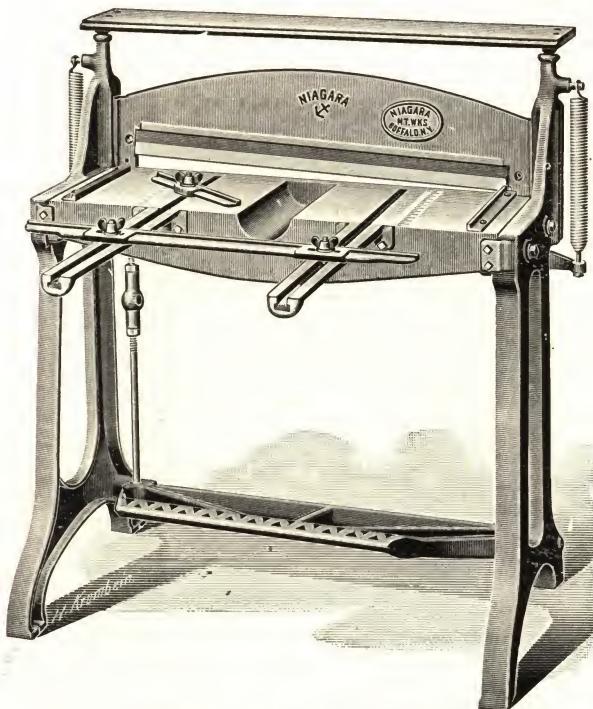
Our squaring shears are shipped set up, ready for use. For long distances they can be knocked down at extra charge.

The price of the shears includes a set of front, bevel and side gauges, also micrometer back gauge, page 102, and the top shelf.

	Shipping Weight	Price
14-inch Excelsior Squaring Shear.....	210 lbs.	\$33.00
22-inch Excelsior Squaring Shear.....	350 lbs.	35.00
30-inch Excelsior Squaring Shear.....	430 lbs.	48.00
Iron Drop Tables, extra.....		2.00

The cut shows the 30-inch Excelsior Shear with iron drop tables, which are very convenient.

QUEEN CITY SQUARING SHEARS



For No. 18 Iron and Lighter

The Queen City Shears are in appearance similar to the "Excelsior," but, being heavier and stronger than these and other tinnery shears, they will cut thicker material.

Side legs and guides for cutter bar are in one piece.

Provision is made to compensate for the wear of the knives and guides.

The knives are made of best materials and ground perfectly true.

Graduated scale is marked on bed.

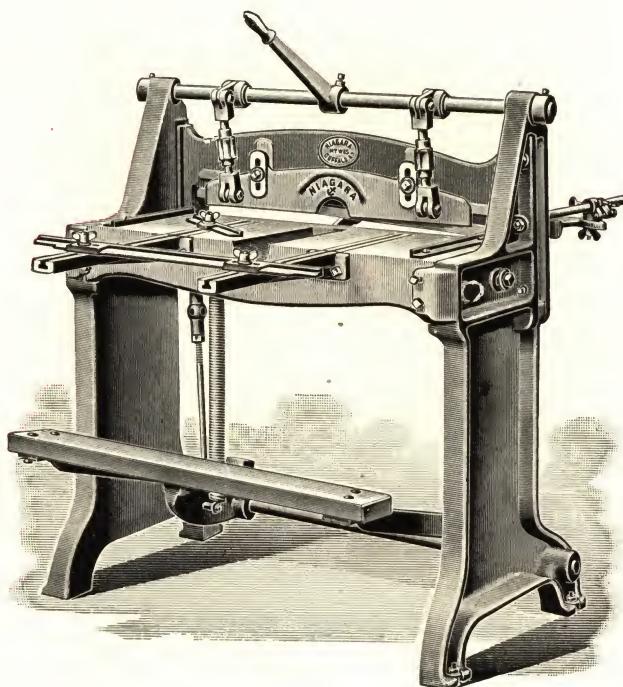
On shears 36 inches and longer it is advisable to use a hold-down attachment in front of the cutter bar, to insure a straight cut.

The price includes a set of front, back, bevel and side gauges. The micrometer back gauge, page 372, is furnished with Queen City Shears up to 36 inches long unless otherwise ordered.

	Shipping Weight	Price
22-inch Queen City Squaring Shears.....	360 lbs.	\$ 40.00
30-inch " " " "	500 lbs.	53.00
36-inch " " " "	600 lbs.	80.00
42-inch " " " "	750 lbs.	115.00
52-inch " " " "	900 lbs.	170.00
62-inch " " " "	1200 lbs.	210.00
Additional for hold-down on 30-inch and smaller shears.....		5.00

The above prices include a top shelf for 22 and 30-inch shears. Prices of 36-inch and larger shears include a hold-down attachment.

HERCULES SQUARING SHEARS



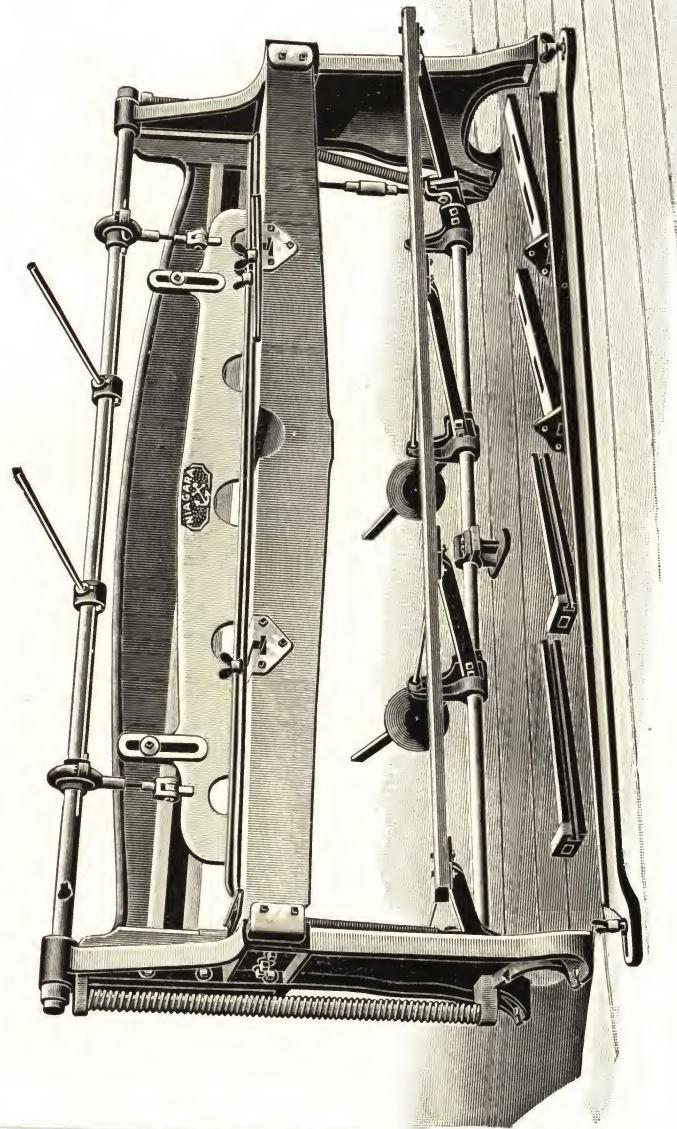
For No. 15 Iron and Lighter

The Hercules Squaring Shears are substantial and powerful machines. The bed is extra strong, and the treadle is made of steel and extensible, so that the leverage can be adjusted according to the power required. An independent hold-down, operated by hand lever, as shown in cut, is provided. The price includes a set of gauges including the micrometer back gauge (page 372), on shears up to 36 inches long.

This Shear will not be supplied without hold-down.

		Shipping Weight	Price
30-inch Hercules Squaring Shears, with hold-down.....		750 lbs.	\$ 75.00
36-inch " " " " 		850 lbs.	100.00
42-inch " " " " 		1000 lbs.	140.00
52-inch " " " " 		1200 lbs.	200.00

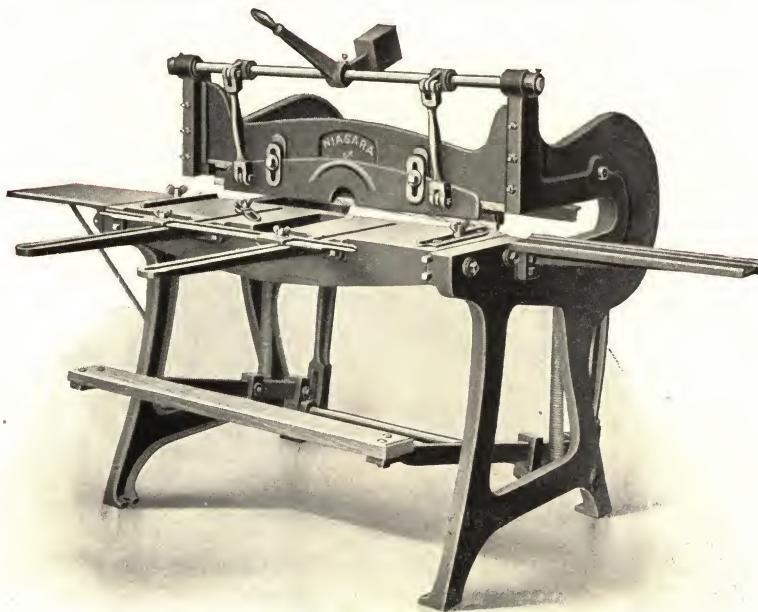
NIAGARA FOOT SQUARING SHEARS, NOS. 172F, ETC.



No. 196F—8-Foot Shears, for Foot Power

	Cutting Length, Inches	Shipping Weight Lbs	Price
No. 172F, Niagara Foot Squaring Shears.....	72	1700	.....
No. 184F, " " " "	84	2200	.....
No. 196F, " " " "	96	3050	.....
No. 1120F, " " " "	120	3700	.....
Improved Automatic Back Gauge in place of ordinary one, extra			

NIAGARA FOOT GAP SHEARS—IMPROVED



For No. 16 Iron and Lighter

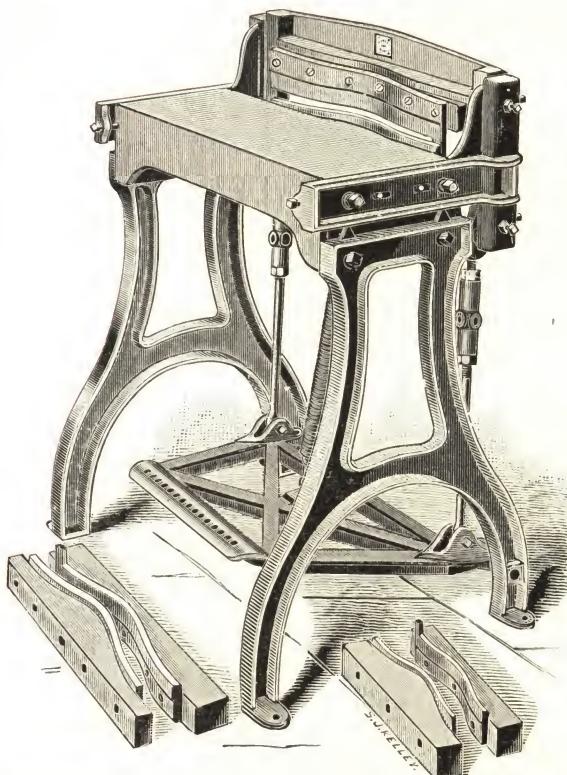
The gap arms formerly used to connect the cutter bar to the treadle rods are abandoned in the new construction, thereby reducing the weight that must be moved at each stroke. A series of compound levers, pivoted on the housings, connects the crosshead to the treadle rods.

The housings are made with a throat 15 inches or 18 inches deep, as may be ordered, to permit of cutting sheets of any length as far from the edge as the gap allows it. The actual cutting length is about 1 inch more than the nominal size, and the housings are far enough apart that sheets in width equal to the cutting length can be passed through front to back without obstruction.

The treadle bars are made of steel, and are extensible, to permit of regulating the length according to the thickness of material to be cut.

The price includes lever holdown, a set of front, back, bevel and side gauges and drop leaf table at the left hand end. There is a slitting gauge at the right hand end, by means of which the second and following cuts can be gauged from the cutting line previously obtained, to insure alignment. The back gauge has a micrometer device for close adjustment.

	Shipping Weight	Price
30-inch foot gap shears, 15-inch throat, with holdown and gauges..	1100 lbs.	\$.....
36-inch foot gap shears, 15-inch throat, with holdown and gauges..	1200 lbs.	.....
42-inch foot gap shears, 15-inch throat, with holdown and gauges..	1350 lbs.	.....
52-inch foot gap shears, 15-inch throat, with holdown and gauges..	1600 lbs.	.....
Extra for 18-inch throat.....		.....



NIAGARA CURVED SHEARS

These shears were designed for cutting sections for stovepipe elbows and other irregular shapes.

Knives for cutting curves or irregular lines are preferable to dies, because they are cheaper and more easily ground and kept in order.

Our curved shears have long slides and guides, thus making the cutter bar work as accurately as any press. We make them either for foot or belt power.

The power curved shears are arranged substantially the same as our power squaring shears, having an automatic clutch, whereby the machine makes but one cut and then stops to give time to arrange the sheet for the next cut.

		For Knives Up To	Shipping Weight	Price
20-inch	Niagara foot curved shear.....	6-inch	400 lbs.	\$ 40.00
25-inch	" "	7-inch	540 lbs.	45.00
30-inch	" "	8-inch	630 lbs.	52.50
36-inch	" "	9-inch	800 lbs.	75.00
42-inch	" "	12-inch	1150 lbs.	100.00
52-inch	" "	14-inch	1300 lbs.	150.00
20-inch	" power	6-inch	750 lbs.	125.00
25-inch	"	7-inch	900 lbs.	130.00
30-inch	"	8-inch	1200 lbs.	140.00
36-inch	"	9-inch	1350 lbs.	160.00
42-inch	"	12-inch	1700 lbs.	185.00
52-inch	"	14-inch	1950 lbs.	240.00

The price of the shears does not include knives.

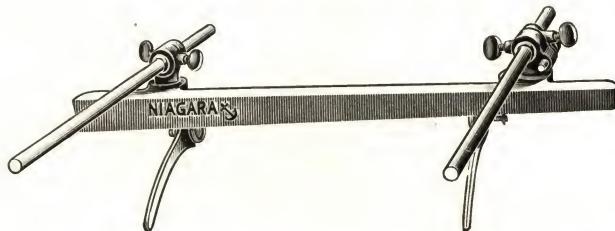
PRICES OF CURVED KNIVES AND BLOCKS

For elbows.....	2-inch	2½-inch	3-inch	3½-inch	4-inch
Per set.....	\$24.00	26.00	27.00	30.00	32.00
For elbows.....	.4½-inch	5-inch	5½-inch	6-inch	7-inch
Per set.....	\$34.00	36.00	38.00	40.00	42.00
For elbows.....	.8-inch	9-inch	10-inch	11-inch	12-inch
Per set.....	\$45.00	50.00	55.00	62.00	70.00

The above are prices of knives for elbows 4-pieced, 90 degree, with the seam in the throat. If the seam is to be on the side of the elbow, the knives will cost 10 per cent more than above prices.

Knives for elbows of special degrees are subject to an extra charge.

MICROMETER BACK GAUGE



This gauge possesses all the advantages of the ordinary back gauge formerly furnished with tinnery shears. It can be quickly adjusted parallel to the knives or at an angle, and in addition it enables the operator to make the final adjustment with greater accuracy than it is possible with the ordinary gauge. This adjustment is made by means of micrometer screws after the gauge has been moved approximately to the desired position. Attached to the gauge there are one or two supports, which lead the edge of the material to the face of the gauge; they can be quickly moved downward, if desired.

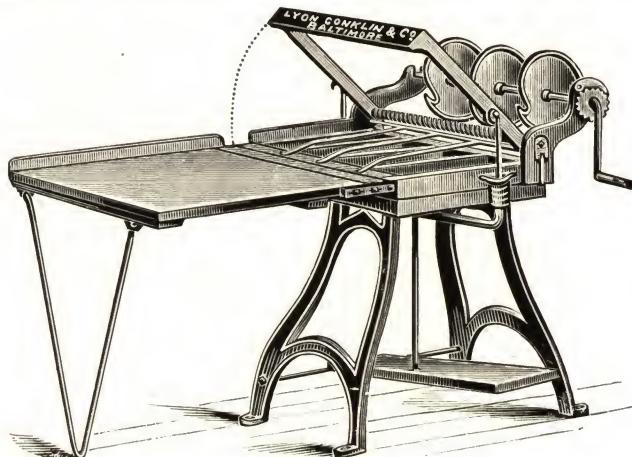
Our Micrometer Back Gauge is furnished with all Excelsior, Queen City, Niagara Weight and Hercules Shears up to 36 inches long.

SQUARING SHEAR KNIVES

Duplicate knives for Excelsior, Queen City, Niagara Weight and Hercules Foot Shears will be furnished at the following prices. Quotations on knives for other Shears will be given on application.

Inches	14	22	30	36	42	52	62
Per pair	\$9.00	9.00	12.00	16.00	22.00	30.00	34.00

LYON & CONKLIN DOUBLE CROSS SEAMER

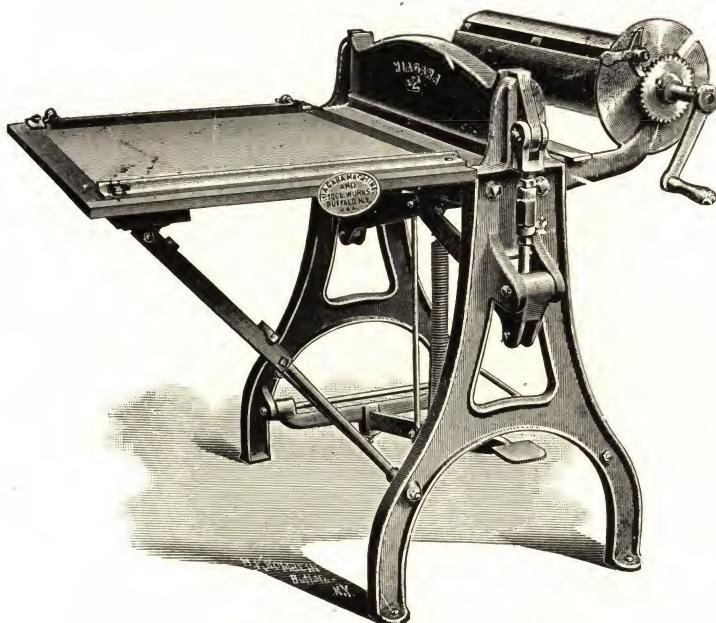


Cut of Machine showing the Drop Table raised in position to operate.
We Guarantee this Machine superior to all others made for this purpose.

20 in. Machine, which will put together tin 14 and 20 in.....\$45.50 net
28 in. Machine, which will put together tin 14, 20 and 28 in..... 50.50 net

F. O. B. Factory.

NIAGARA CROSS-LOCK SEAMER



This machine is intended for seaming together sheets of tin and rolling up the lengths ready to lay on the roof. It is simple, rapid, and saves time and labor. The parts of the machine are so arranged that the operator can do the work conveniently.

All parts of this Seamer are constructed with a view to strength and rigidity. The pressing bar is operated by a powerful toggle movement, connected with foot treadle and the seam produced at one depression of the treadle is perfectly tight and uniform the entire width.

The table which supports the sheets carries two side gauges, one of which is stationary; the other gauge is backed by springs which press the sheet against the stationary gauge. The distance between the gauges can be adjusted for 20-inch and 28-inch tin, or for other sizes by drilling additional holes in the table. The position of the sheets is also determined by means of spring pins, carried by the pressing bar. The pins can be raised sufficiently to allow the first lock to pass through.

The reel in the rear of the machine, which is covered with sheet steel, is controlled by a ratchet and pawl. Provision is made for soldering the seams before winding them on the reel. The rolls of tin can be removed without difficulty.

The drop table is hinged to the frame and supported by brackets. It can be lowered easily, so as to occupy the least possible space.

	Shipping Weight	Price
30-inch Niagara Cross-Lock Seamers, with reel and drop table..	535 lbs.	\$45.00

LIGHTNING SLATE DRESSER

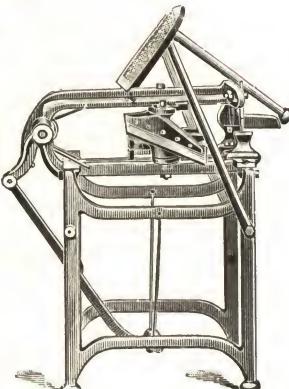
Adjustable to any size or shape; cuts and punches at same operation; countersinks the hole; cuts round or straight; spoils no slate.

Price, \$.....

**IDEAL SLATE DRESSER**

A Superior Machine

**Strong, Durable and
Well Finished
Greatly Improved**



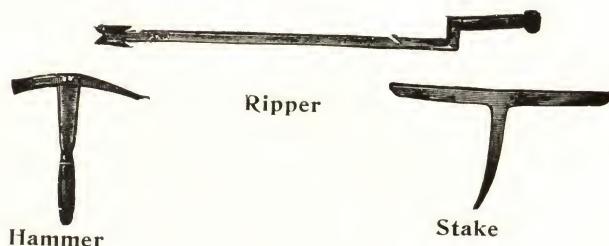
One set of knives cut octagon, hexagon, diamond, or any other desired angle. Also two sets of circle knives to cut convex and concave. For ornamental work it is indispensable and will cut and punch any size slate from 6 to 16 inches wide and from 12 to 28 inches long.

Figures for various sizes of slate. It has on the bed plate figures to represent the various sizes of slate, so that an inexperienced hand can set the machine to cut and punch to standard gauge.

The seat is a great convenience, as it holds the operator and machine in the proper relation to each other, and saves the time and trouble of hunting up a keg or block to sit on. The seat folds up when not in use or for transportation and requires no extra space.

Price, \$.....

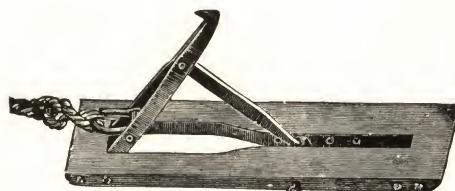
SLATERS' TOOLS



The hammers are forged from one solid piece of steel, finely polished and tempered, and the ripper blade is cut from tool steel.

Slaters' rippers, each	\$2.00
Slaters' hammers, each	3.00
Slaters' stake, not graduated, each.....	.75
Set of slaters' tools—ripper, hammer and stake, each.....	5.50
Slaters' stakes, graduated, 1 to 12 inches, each.....	1.25

SLATERS' SCAFFOLD BRACKET



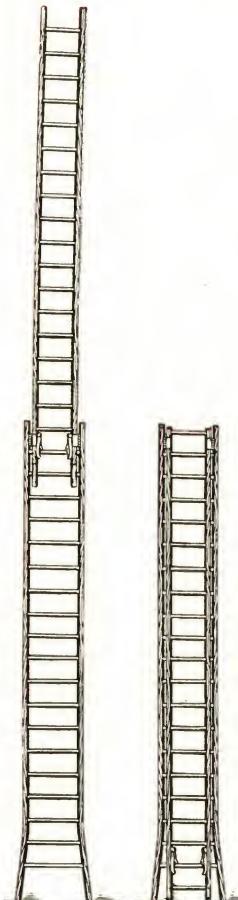
Scaffold Bracket Ready for Plank



Bracket Closed When Not in Use

Price, each	\$ 2.50
Price, per set of six.....	12.00

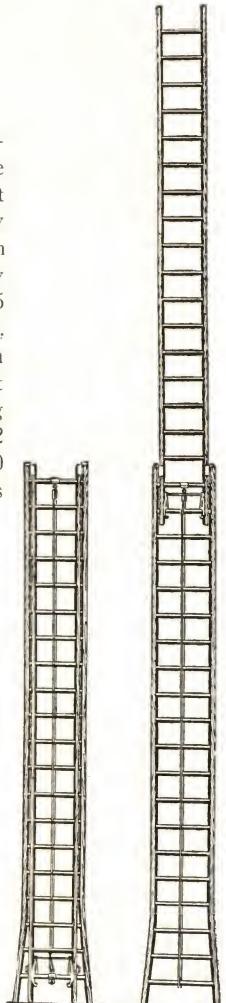
EXTENSION LADDER



Without Rope

This ladder is made of the best selected Norway pine for side rails, rock elm and Hickory rungs. Our catch is constructed of the best malleable iron and works perfectly, being easily operated with or without a rope, and is simply a gravity catch and requires no spring or extra rope to operate it. It consists of only two working parts and is bolted to the side rail. No screws to work loose and no rivets to break off.

In ordering, bear in mind that a certain amount has to be allowed for the "lap" when the ladder is in its most extended form, the amount of necessity increasing as the ladders increase in length, in order to obtain perfect safety and firmness. In lengths of 12 to 16 feet deduct one foot for lap—that is, a 12-foot ladder would be 6 feet high when closed and would form a 6-foot step-ladder, but would be 11 feet long when extended. In lengths of 18 to 32 feet deduct two feet, and from 34 to 40 deduct three feet from the total lengths in same manner.

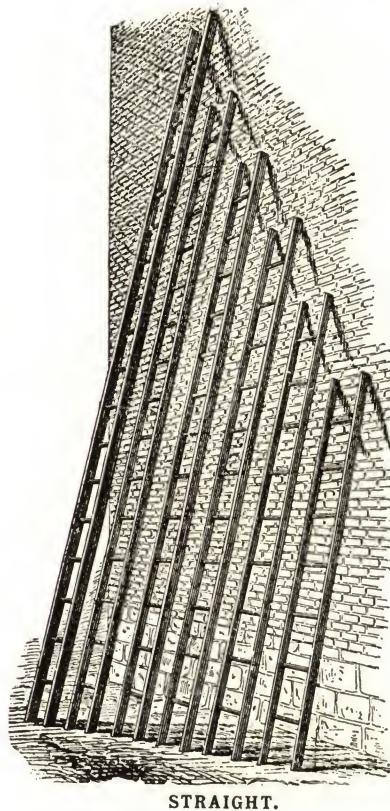


With Rope

Extension ladders are never furnished with windlass unless ordered special, in which case shipments will be made from factory. Prices on application.

12 to 32 ft. extension ladders, per foot.....\$.....
34 to 44 ft. extension ladders, per foot.....\$.....
44 ft. and up extension ladders, per foot.....\$.....

Ladders with rope, add one cent extra per foot.

COMMON STRAIGHT LADDER

STRAIGHT.

Same stock as in our Automatic and Combination Step and Extension. Side rails same width top and bottom, but rounds running longer from top to bottom, which makes it a very wide and rigid ladder.

Made in lengths from 8 feet to 20 feet, inclusive.

Price per foot.....\$.....

ADAMS' LADDER JACK AND SCAFFOLD SUPPORT

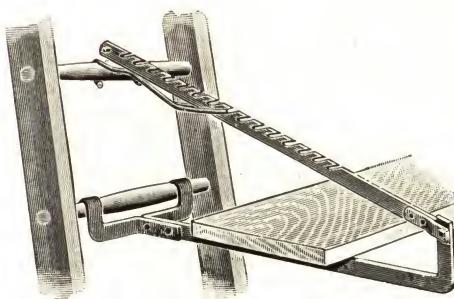
For Painters, Tinners and Building Trades.

They are made of wrought iron, have a double hook which divides the strain and holds the jack firm.

They are light, strong and easily adjusted, and make a firm scaffold. We do not paint or japan these jacks, therefore no flaws or imperfections are covered up.

With a pair of these jacks you are prepared for a job at any time. Painters can make a great saving of time by their use.

Price per pair.....\$3.50 net



DANZER'S LIGHTNING EDGERS

Capacity, foot power, a box of 20 x 28 tin in $6\frac{3}{4}$ minutes.

Capacity, hand power, a box of 20 x 28 tin in 10 minutes.

It will edge from $\frac{1}{4}$ to $\frac{5}{8}$ inch wide, either in tin or No. 27 and stove pipe iron. It will finish tin ready for flat seam roofing. It will edge a sheet of tin and kick it out without moving the sheet or turning it over the top of machine. A boy can work it. It will edge more tin than any other two machines. It is a time, labor and money saver. It is the latest and just out. Made in two sizes.

No. 20 21 inches wide, hand power, price.....\$12.50

No. 30 31 inches wide, hand power, price..... 16.25

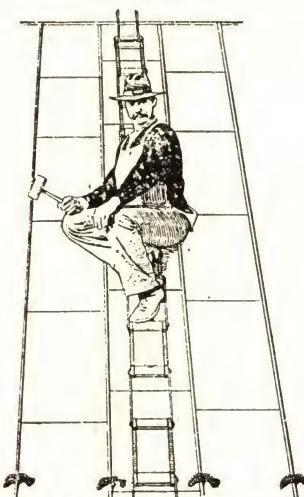
Foot power.....\$25.00

Foot power..... 28.50

Discount.....per cent.



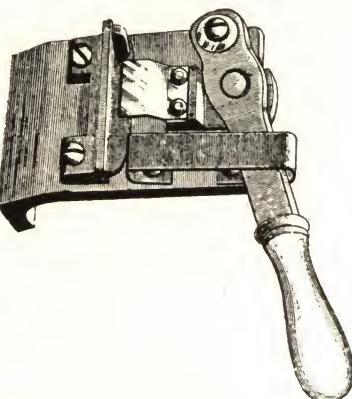
DANZER'S FOLDING ROOF LADDER



$8\frac{1}{2} \times 14 \times 14$ inches, and weighs $1\frac{1}{8}$ lbs. to the foot. Made of steel with hard-wood cross pieces. Can be shortened to any length. Made in any length from 16 feet up in even feet.

Price, per foot.....\$0.25

Just the thing for tinners, slaters, painters, repairmen, etc. The most convenient ladder ever made for roofers. A 20 foot ladder folds as shown to a size

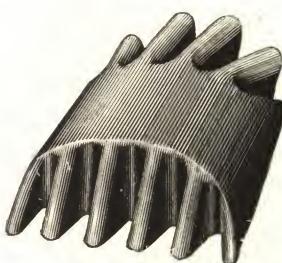
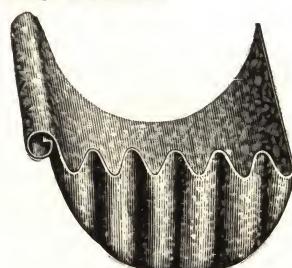


DANZER'S LIGHTNING CLEAT MAKER

Just what every roofer needs. One movement of the handle makes the cleat and drops it in the box. It will make cleats $1\frac{1}{2}$ inches wide and under, in tin or galvanized iron, and any length you want. Weight 5 lbs. Capacity, 35 cleats per minute.

Price, net\$1.50

BISHOP'S QUICK WORKING FORMS

**The Tool****The Work**

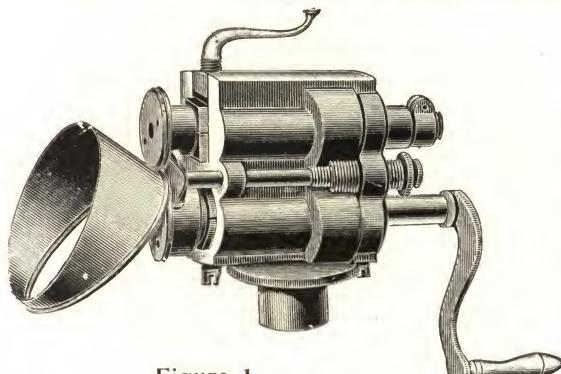
For closing end of Eaves Trough in corrugations, as shown herewith.

You can close an end much quicker, neater and cheaper than in any other way. The form is made in two sizes on which you can close all sizes from 3 in. to 5 in., and is light enough to use anywhere you wish the work done.

Instruction.—Cut end of trough on about a half circle, cutting bead a little short with a hack saw. The pattern will readily be gotten by the eye after one or two trials. Place sloping end of form in gutter about even with end. Start iron into grooves; then reverse form and set up the iron into grooves on right angle end with a dull peen hammer. Don't give up on the first trial, as there is a little knack in doing the work neatly. Start all the grooves a little before setting them down, commencing with outside ones. Clamp the form in place on first trial—you will not need the clamp after a few trials.

Price per set, including 3½ inch and 5 inch former.....\$.....

DOUBLE EDGING ROLLS

**Figure 1**

Shows position for elbow of pipe in turning edges.

DIRECTIONS—First see that the gauge on the machine is straight with the rolls. Should it not be straight heat the rod red hot close to gauge and tap lightly with the hammer until it fits close to upper roll. Then place the movable gauge on the one already on the machine and then put on the rollers so they will match together nicely. Do not crowd the material to the gauge, but let it run free, touching the gauge at the center of the rollers, and with one revolution of the metal you will have two perfect edges.

Price per set.....\$.....

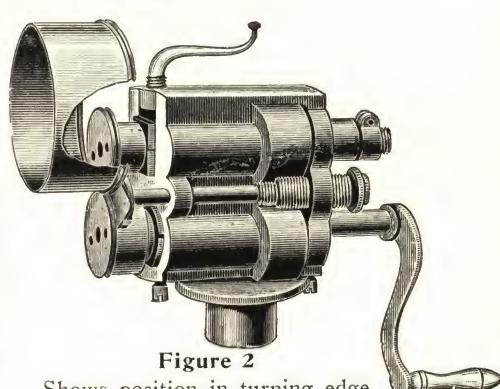
They cost nothing, as one week's work will save the price.

Will work from the lightest tin to No. 26 iron warranted.

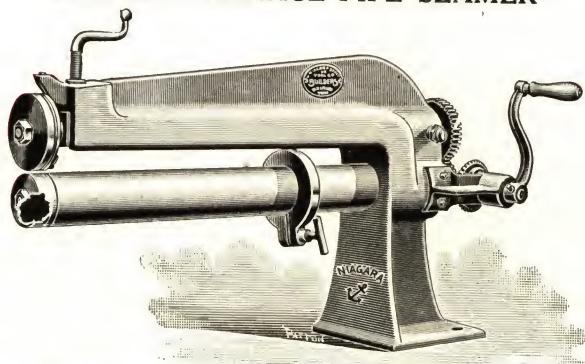
Will fit any small size turner made within 20 years.

Hundreds now in use and giving the best of satisfaction.

Buy one and be convinced of their worth..

**Figure 2**

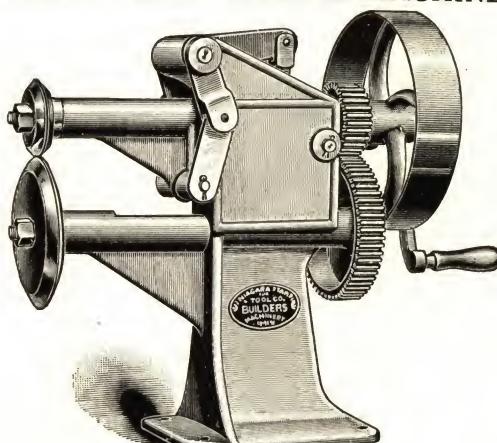
Shows position in turning edge on collar.

28-INCH FURNACE PIPE SEAMER

The Furnace Pipe Seamer has a throat 20 inches deep to accommodate furnace pipe of the usual length. The gauge is adjustable. This machine closes the seam, turns it over, and finally grooves and presses it tightly, without exchange of faces.

The illustration shows the machines for hand power, but pulley can be attached, if desired.

	Shipping Weight Lbs.	Price
20-inch Furnace Pipe Seamer, with crank screw and standard.....	175	\$35.00
28-inch " " " " "	350	60.00
Tight pulley, extra		4.00

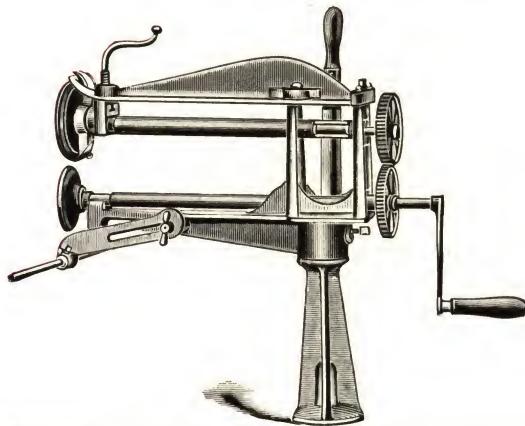
ELBOW SEAM CLOSING MACHINES**LARGE ELBOW SEAM CLOSER**

Elbow Seam Closer No. 4 is intended for stove pipe elbows from $3\frac{1}{2}$ to 7 inches diameter. The faces can be used for tight and loose seams.

Large Seam Closer was designed for furnace pipe elbows. The faces are adjustable for loose or tight seams. The upper roll is depressed by means of foot treadle attachment. Lower face about 7 inches diameter; upper 4 inches diameter. The pulley is now put on lower shaft.

	Shipping Weight Lbs.	Price
No. 4 Elbow Closer, for hand, with treadle attachment.....	100	\$23.00
Large " " " " "	175	45.00
T. pulley to No. 4 Closer, extra.....		3.00
large Closer, extra.....		4.00

MOORE'S DOUBLE SEAMER



For general use. Best adapted to the ordinary wants of tinners.

Diafnieter of lower face: No. 1, 4½ inch; No. 2, 4 inch; No. 3, 3 inch.

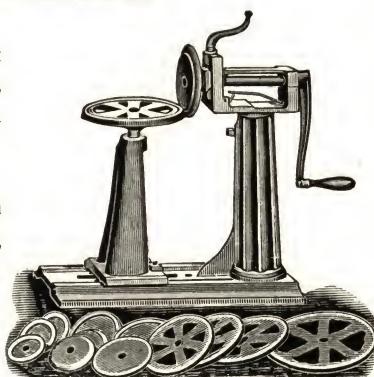
Depth of throat: No. 1, 15 inch; No. 2, 13 inch; No. 3, 10 inch.

	Shipping Weight	With Stand
No. 1 Moore's Double Seamer.....	100 lbs.	\$21.00
No. 2 " " "	80 lbs.	19.00
No. 3 " " " for coffee pots and small work.....	70 lbs.	16.00
No. 4 " " " for work 3½ inches diameter and larger, up to 29 inches long, No. 26 gauge and lighter (similar to Furnace Pipe Seamer, page 380).....	340 lbs.	60.00
Extra stands for Nos. 1 to 3, each.....	.....	1.00
Extra faces for Nos. 1 to 3, each.....	.....	1.50

HULBERT'S DOUBLE SEAMER

Double seams all kinds of flaring and straight work, coffee and tea pots, oval and round boilers and raised work. The deflector sets off the bottom after seaming, to stiffen it.

Ten disks and three faces accompany each Seamer. Diameter of flaring disks, 4⅛, 6⅓, 7⅜, 8⅔ and 11½-inch; straight disks, 4⅓, 5¾, 8⅔ and 10⅓-inch; oval edge disk, 5⅜-inch.



	Shipping Weight	With Stand
Hulbert's Seamer, with deflector for work up to 14 inches high.....	125 lbs.	\$27.00
" " without " " 14 inches "	120 lbs.	25.00
" " with " " " 20 inches "	180 lbs.	30.00
Extra disks, each .....	.....	1.50

HEAVY HULBERT'S DOUBLE SEAMER**Capacity, No. 22 Iron and Lighter**

This seamer is intended for double seaming flat bottoms of comparatively heavy material. The standard with disk receives bodies up to 25 or 36 inches high. Work of the extreme height must be at least 16 inches diameter, as otherwise the supporting standard for the seamer disk will interfere.

Can be furnished for belt power, also with setting down attachment, which permits of setting down the edges prior to double seaming, for which a setting down machine is otherwise required.

The price includes a disk 12 inches diameter. Disks of special sizes can be furnished.

	Shipping Weight	Price
25-inch Hulbert's double seamer, heavy.....	450 lbs.	\$.....
36-inch Hulbert's double seamer, heavy.....	500 lbs.	.....
Power attachment, with T. and L. pulleys, extra.....	.....	.....
Setting down attachment, extra.....	.....	.....

NIAGARA TURRET DOUBLE SEAMER

(Patented)



Intended for double seaming round bottoms onto cylinders in making tanks and similar work. With the regular faces the 36-inch seamer is suitable for iron from No. 18 to No. 22 gauge, and the 48-inch seamer for No. 20 to No. 22 gauge. For lighter material extra seaming rolls are needed. Prior to double seaming, the end of the cylindrical body as well as the bottom must be flanged. It is not necessary to stamp the bottoms with expensive dies, nor to set down the seams by means of another machine.

One of the pedestals carries the seaming disk on which the work rests. The other supports the double seaming head with a slide on which the turret seaming device is mounted. Three rolls, driven by gears, are brought in contact with the work successively until the seam is completed. The turret head and slide are actuated by levers conveniently located.

One of the principal advantages of this machine consists in that it can be operated by cheap help, skilled operators not being required. The machine is powerful and produces a perfectly tight seam.

The price includes a seaming disk 12-inch diameter that will answer for larger work as well. For work 9 to 12 inches diameter, an extra seaming disk is required.

	Shipping Weight	Price
36-inch Niagara Turret Double Seamer, with 12-inch disk, for power	1900 lbs.	\$.....
48-inch Niagara Turret Double Seamer, with 12-inch disk, for power	.....	.....
9-inch seaming disk, extra.....	.....	.....
Extra seaming rolls, per set of three.....	.....	.....

MACHINE PARTS

We give below prices for odd parts of machines, which we are frequently asked to furnish. In case of order please state the number and name of machine, also its factory number. We do not supply parts for machines that are not of our manufacture.

WRIGHT'S FOLDER

Upper hinge bar.....	\$4.00
Lower hinge bar.....	3.00
Slotted angle blade.....	2.00
Slotted gauge	1.00
Gauge strips for Fairchild's.....	.25
Thumb screws, each.....	.20
Handle .....	.75
Handle bolt .....	.15

NIAGARA ADJ. PIPE FOLDER

Steel rod .....	.25
Beveled blade	1.50
Slotted gauge	1.00
Slotted clamping blade.....	1.50

MACHINE STANDARDS—LIGHT PATTERN

Button .....	.08
Handle screw25
Handle10
Shoe for Superior30

RAYMOND'S MACHINES

Brass top plate.....	1.25
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BEADERS

Gauge for Nos. 1, 2 and 3.....	1.00
Gauge for Nos. 4 and 5.....	.50
Gauge for No. 02½.....	1.50
Connecting gears for Nos. 1, 2, 3 and 02½	1.50
Connecting gears for No. 4.....	1.25
Connecting gears for No. 5.....	1.00
Large gear wheel, Nos. 1, 2, 3 and 02½	1.25
Pinion, Nos. 1, 2, 3 and 02½.....	.75
Cap for No. 4.....	1.25

NIAGARA CRIMPER AND BEADER

Connecting gears, per pair.....	1.25
Gear wheel	1.00
Gauge .....	.50
Adjusting wedge .....	.75

HEAVY CRIMPER AND BEADER

Connecting gears, each.....	1.25
Gear wheel	1.50
Pinion .....	.75

STOVE PIPE FORMER

Gears, per pair.....	1.00
Thumb screws, per set of 4.....	1.40
Boxes, per set of 4.....	1.00

GROOVERS — STOW'S, ENCASED AND NIAGARA

Spring roll50
-------------------	-----

Spring	\$0.50
Bolt and nut for roll.....	.25
Stand	1.25
Groover rolls .....	.75
Rack with brass mount.....	3.25
Brass mount	2.50
Pinion .....	.50
Screw handle for stand.....	.40
Connecting latch .....	.50

MOORE'S DOUBLE SEAMERS

Thin steel wheel.....	.75
Yoke .....	.75
Gauge .....	.50
Gears, per pair.....	1.25
Spring .....	.10
Standard	1.00

WIRE CUTTER AND BAIL FORMER

Gauge .....	.50
Spring .....	.20
Circle guide	3.50
Bed plate	3.00

WAUGH'S CIRCLE SHEARS

Connecting gears, per pair.....	1.25
Circle gauge .....	.50

SQUARING SHEARS—EXCELSIOR, QUEEN CITY AND NIAGARA

30-INCH

Front gauge, 20, 25 and 30-inch.....	1.00
Bevel gauge .....	.50
Back gauge, old style.....	1.00
Front brackets, per pair.....	1.50
Back brackets, old style, per pair.....	1.50
Gauge bolt and nut.....	.15
Springs, each .....	.75
Connection rods	1.00
Treadle	3.00
20-inch bed	10.00
30-inch bed	12.00
20-inch cutter bar.....	5.00
25-inch cutter bar.....	5.00
30-inch cutter bar.....	6.00
Bolts for upper and lower knives, per set of 9.....	.75
Crank handles, 7 and 9-inch, light patterns, for encased machines, etc.....	.50
Crank handles, 9½-inch, heavy pattern, for Nos. 1 to 3 beaders, etc.....	.75
Crank screws, small, for encased machines, etc.....	.40
Crank screws, large, for Nos. 1 to 3 beaders, etc.....	.75

INTERCHANGEABLE PARTS TO THE ENCASED MACHINES

ENCASED WIRING MACHINES

	17 & 20 Inches	30 & 36 Inches	42 Inches
A. Frame	\$2.50		
B. Cap	1.50		
CC. Upper face	1.50		
C. Upper shaft	1.00		
DD. Lower face	1.50		
D. Lower shaft	1.00		
H. Clasp nut .....	.50		
I. Front upper box, for upper shaft .....	.25		
J. Front lower box, for upper shaft .....	.25		
K. Front and back, top boxes for lower shaft.....	.25		
L. Front and back, lower boxes for lower shaft.....	.25		
M. Gear .....	.50		
N. Sliding gauge	1.25		
O. Sliding gauge nut.....	.75		
P. Forming gauge for wiring machine .....	.75		
Q. Forming gauge roller for wiring machine .....	.25		
R. Forming gauge worm gear for wiring machine.....	.75		

S.	Forming gauge nut for wir-	
T.	wiring machine	\$.10
U.	Worm gear screw .....	.50
V.	Worm gear screw holder... .	.25
	Rocking box .....	.75
	Wrench .....	.50

SCREWS

1.	Crank Screw .....	.40
2.	Cap Screw .....	.15
3.	Lower Box Screw.....	.10
4.	Worm Gear Screw Holder Bolt	.10
5.	Clasp Nut Screw.....	.10
	Spring .....	.10
	Extra faces for burring and Turn-	
	ing machines, each.....	1.00
	Crank handle, each.....	.50

SETTING DOWN MACHINES

Upper face	1.25
Lower face, with stud and gear...	1.50
Journal plate .....	.50
Top plate .....	.75
Shaft	1.25

The corresponding parts of other Encased Machines bear the same letters or figures as far down as the letter O, also Rocking Box V. Those bearing the letters from P to U, inclusive, are found only in the Wiring Machine.

PARTS TO KEYSTONE AND EXCELSIOR BAR FOLDERS

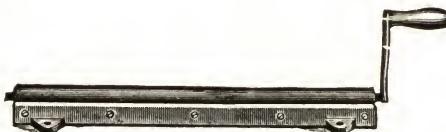
	17 & 20 Inches	30 & 36 Inches	42 Inches
40. Jaw	\$4.00	\$6.00	\$12.00
42. Bar	4.00	5.00	10.00
43. { Gauge slide... .75	.75	1.00	
{ Gauge	2.75	3.00	6.00
44. Wing for bar. 3.00	4.00	8.00	
46. Frame	6.00	7.00	15.00
47. Blade	4.00	5.00	12.00

For Sizes 17 to 42 Inches

41. Wrench .....	.10
45. Wedge .....	.50
50. Shoe .....	.50
51. Handle .....	.40
53. Square stop .....	.15
54. Bevel stop .....	.15
55. Square head wedge screw....	.10
56. Frame pin .....	.10
57. Wing pin.....	.10
58. Stop pin.....	.10

59. Shoe set screw.....	\$.10
60. Cap screw .....	.10
61. Blade screw.....	.10
62. Wedge screw, round head. .	.10
63. Gib set screw.....	.10
64. Gauge plate screw.....	.10
65. Worm support screw.....	.10
66. Index finger screw.....	.10
67. Handle set screw.....	.10
68. Worm support set screw.....	.10
69. Index finger .....	.25
71. Link .....	.25
72. Gauge springs, per pair.....	.10
73. Gib .....	.25
74. Wedge rack pinion.....	.50
75. Worm support.....	.50
76. Cap plate.....	.50
77. Worm screw.....	1.50
78. Cap .....	.25
79. Worm wheel	1.25
80. Friction roller.....	.25

IRON BOTTOM GUTTER BEADERS



			Net Weight Lbs.	Price
15-inch	Iron Bottom Gutter Beader with rod, $\frac{3}{8}$ to $\frac{3}{4}$ inch.....		8	\$ 3.50
20-inch	" " " $\frac{3}{8}$ to $\frac{3}{4}$ -inch.....		18	4.00
30-inch	" " " $\frac{3}{8}$ to $\frac{3}{4}$ -inch.....		24	6.00
42-inch	" " " $\frac{1}{2}$ to $\frac{7}{8}$ -inch.....		48	9.00
60-inch	" " " $\frac{1}{2}$ to 1-inch.....		100	20.00
96-inch	" " "		180	30.00
120-inch	" " "		220	40.00

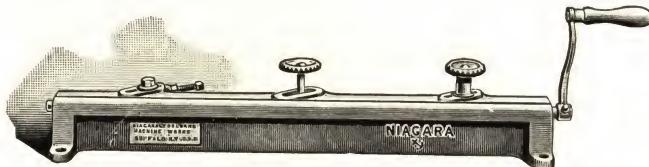
Each machine is fitted for a certain size of rod. The price includes one rod. State diameter wanted.

HANDY TONGS



A useful tool. Blades $6\frac{1}{2}$ inches long, with gauge $\frac{1}{2}$ -inch.

Handy tongs \$1.50

NIAGARA ADJUSTABLE GUTTER BEADERS

These machines possess the advantage of being adjustable for rods of various sizes from $\frac{3}{8}$ to $\frac{3}{4}$ -inch diameter. After forming the bead the jaws can be opened quickly to facilitate removing the work and rod. Owing to the adjustability of the frame, these machines are better adapted than the ordinary Gutter Beader to different thicknesses of material.

		Shipping Weight Lbs.	Price
30-in. Niagara Adjustable Gutter Beader.....		65	\$10.00
42-in. " " "		90	15.00
4-ft. " " "		110	20.00
6-ft. " " "		210	35.00
8-ft. " " "		335	50.00
10-ft. " " "		400	60.00

The price includes one straight rod (state diameter wanted). Prices of extra rods are given below.

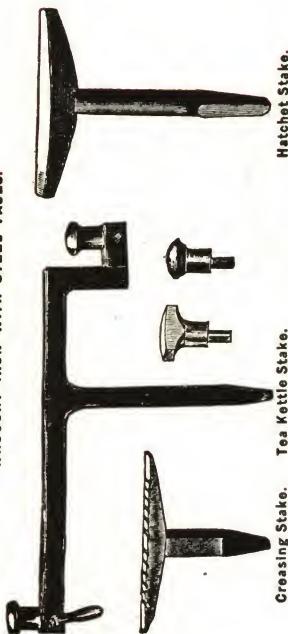
GUTTER RODS—STEEL

Length	15-in.	20-in.	30-in.	36-in.	42-in.	4-ft.	5-ft.	6-ft.	8-ft.	10-ft.
Price	\$1.75	2.00	3.00	4.00	4.50	5.00	6.00	7.50	10.00	12.50

Gutter Beader Rods longer than 30 inches have handles at both ends.

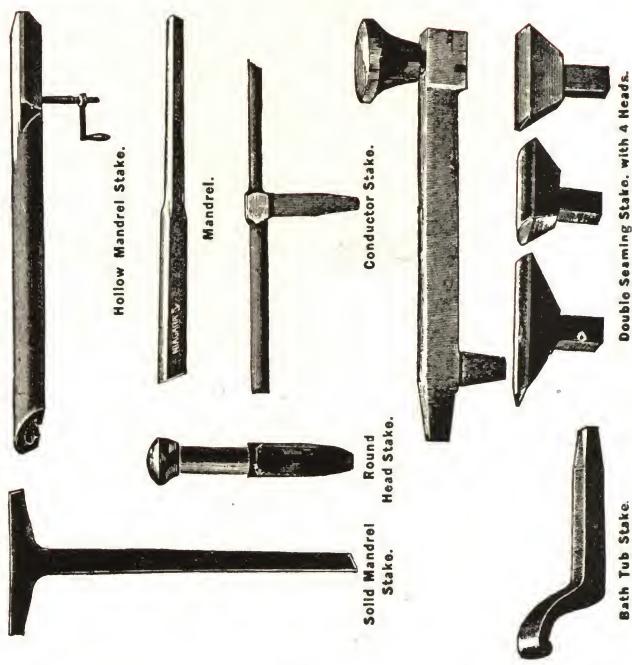
TINNERS' STAKES.

WROUGHT IRON WITH STEEL FACES.



Hatchet Stake.

CAST IRON WITH POLISHED FACES.



Crosting Stake.

Mandrel.

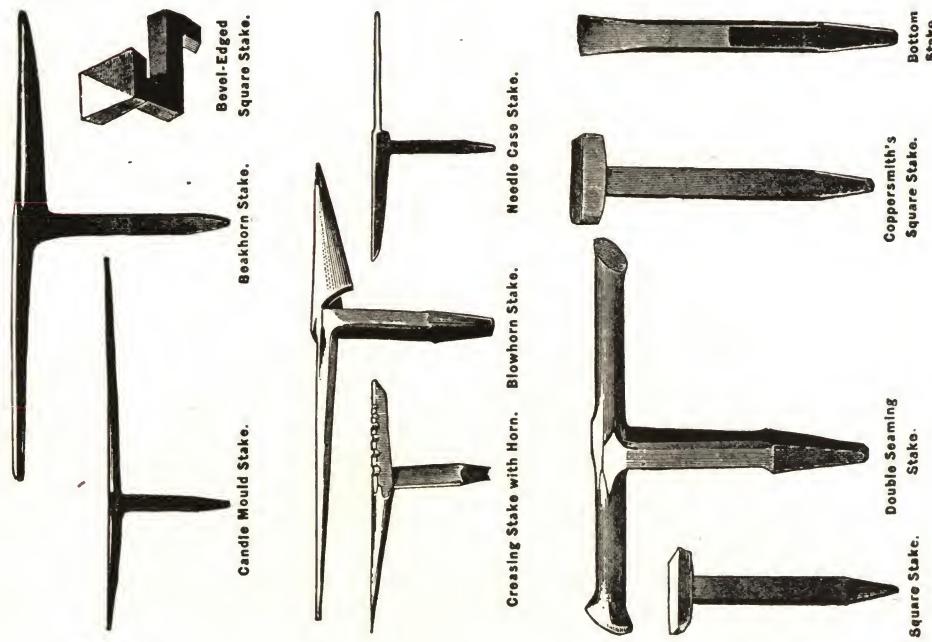
Hollow Mandrel Stake.

Conductor Stake.

Double Seaming Stake.

with a Head.

WROUGHT IRON WITH STEEL FACES



Candle Mould Stake.

Beak horn Stake.

Bevel-Edged Square Stake.

with a Head.

Blow horn Stake.

Needle Case Stake.

Crosting Stake.

with a Head.

Crosting Stake with Horn.

Double Seaming Stake.

with a Head.

Square Stake.

Double Seaming Stake.

Copper Smith's Square Stake.

with a Head.

Square Stake.

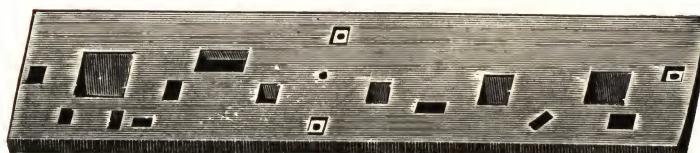
TINNERS' STAKES**WROUGHT IRON WITH STEEL FACES**

				Net Weight Pounds	
No. 1	Beakhorn		50	\$15.00	
No. 2	Beakhorn		40	13.25	
No. 4	Beakhorn		30	10.00	
No. 1	Double Seaming, large end 17 inches, small end 12 inches.		40	9.00	
No. 2	Double Seaming, both ends, 11 inches		32	8.00	
No. 0	Conductor, both ends 14 inches long, $1\frac{1}{8}$ and $1\frac{3}{8}$ inches diameter		24	6.00	
No. 00	Conductor, long end 2 x 20 inches, short end $1\frac{1}{2}$ x 14 inches		34	7.00	
No. 1	Bevel-edged Square, face 3 x 5 inches		13	6.00	
No. 2	Bevel-edged Square, $2\frac{1}{2}$ x $4\frac{1}{2}$ inches		12	5.00	
Blowhorn,	large end 9 inches, small end $17\frac{1}{2}$ inches		14	5.00	
Creasing,	with horn, round end 9 $\frac{1}{2}$ inches, flat end 6 $\frac{1}{2}$ inches		13	4.50	
Common Creasing,	14 $\frac{1}{2}$ inches long		13	4.00	
Coppersmith's Square,	face $2\frac{5}{8}$ x $4\frac{1}{2}$ inches		11	3.50	
Common Square,	face $2\frac{5}{8}$ x $4\frac{1}{2}$ inches		11	3.00	
Large Square,	face $3\frac{1}{2}$ x $5\frac{1}{2}$ inches		15	7.00	
Small Square,	face $2\frac{3}{8}$ x $1\frac{1}{2}$ inches		4	2.00	
Candle Mould,	small end 18 inches, horn $8\frac{1}{2}$ inches		8	2.75	
Needle Case,	flat end 8 inches, small end $10\frac{1}{2}$ inches		3	2.25	
Tea Kettle,	with four heads		50	15.75	
Heads for Tea Kettle					1.75
Hatchet	Nos. 1 2 3 4 5				6
Net Weight lbs.,	13 10 9 7 5				4
Length of Blade ins.,	16 $14\frac{1}{2}$ 13 11 9				7
Price	\$5.00 4.25 3.50 2.75 2.25				1.75
Bottom	Nos. 1 2 3 4				
Width ins.,	$1\frac{3}{4}$ $1\frac{1}{2}$ $1\frac{1}{4}$ 1				
Price	\$1.00 .80 .75 .50				

CAST IRON WITH POLISHED FACES

			Net Weight Pounds	
No. 1	Conductor, turned, large end $2\frac{1}{4}$ x 15 in., small end $1\frac{1}{4}$ x $11\frac{1}{2}$ in		30	\$ 4.00
No. 2	Conductor, turned, large end $1\frac{3}{4}$ x 14 in., small end $1\frac{1}{4}$ x 10 in		20	3.00
No. 00	Solid Mandrel, 60 inches long to the standard		130	10.00
No. 0	Solid Mandrel, 40 inches long to the standard		80	6.00
No. 1	Solid Mandrel, 34 inches long to the standard		60	5.00
No. 2	Solid Mandrel, 30 inches long to the standard		40	4.00
No. 2 $\frac{1}{2}$	Solid Mandrel, 30 inches long to the standard, for 2 in. pipe		30	4.00
No. 3	Solid Mandrel, 27 inches long to the standard		30	3.00
Round Head			10	1.25
Bath Tub			12	1.25
Double Seaming, with four heads			100	9.00
Extra Heads for Double-Seaming Stake with four heads				1.50
No. 000 Hollow Mandrel, 36 inches entire length, 3 inches diameter			30	5.00
No. 0 Hollow Mandrel, 40 inches entire length, 4 inches diameter			50	5.50
No. 00 Hollow Mandrel, 60 inches entire length, $4\frac{1}{8}$ inches diameter			94	10.00
Extra Hollow Mandrel, 48 inches entire length, $11\frac{1}{4}$ inches diameter, flat part 15 inches wide			300	25.00
Hollow Mandrel Fasteners . . . . .				.60
No. 12 Mandrel Stake, rounded part 26 inches long, entire length $44\frac{1}{2}$ inches			50	5.00

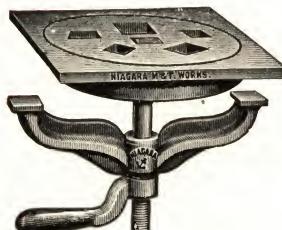
BENCH PLATES



Bench Plates with planed surface, adapted for screwing to a bench and holding stakes and bench shears.

	Net Weight Lbs.	Price
No. 0 Bench Plate, 48 x 12 inches.....	70	\$9.00
No. 1 " " 37 x 8 inches.....	50	5.00
No. 2 " " 30 x 8 inches.....	30	3.00

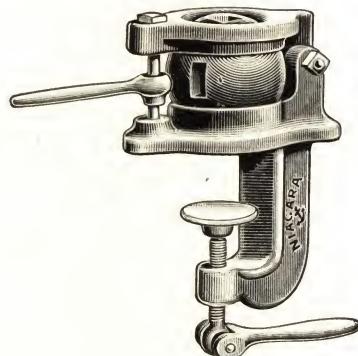
REVOLVING BENCH PLATE



This Plate is inserted into a tinner's bench, to hold stakes, shears, etc., in position convenient for the workman. Size, 9 x 9 inches.

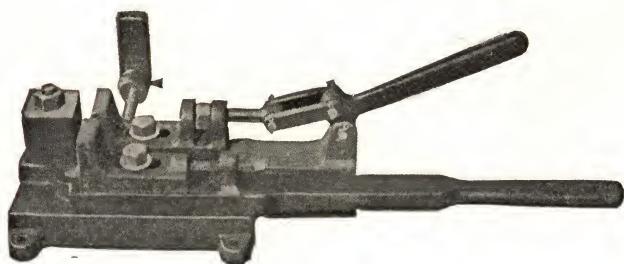
Revolving Bench Plate.....	Weight	Price
	18 lbs.	\$3.50

BENCH SHEAR HOLDER



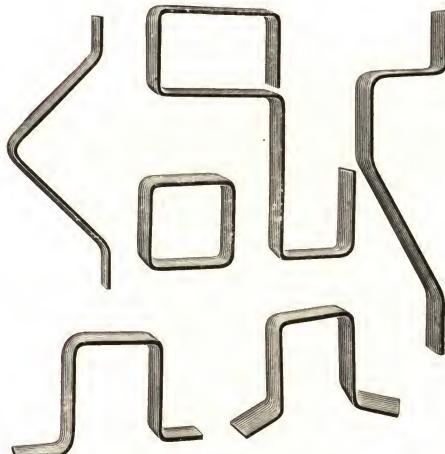
This holder is fastened to the bench like machine standards, and the Bench Shear can be held in any position and at any desired angle.

Niagara Bench Shear Holder..	Weight	Price
	16 lbs.	\$3.00

"AMERICAN" BENDING MACHINE

A wonderful time and labor saver. Time saved is profit. Every machine guaranteed to do satisfactory work.

Price each \$.....

**SPECIMENS OF WORK**

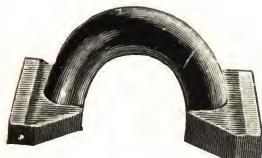
The capacity of the "American" Bending Machine for cold material is $1 \times \frac{3}{8}$ and $2 \times \frac{1}{4}$ inch flats; $\frac{5}{8}$ inch round and squares. For hot material $3 \times \frac{3}{4}$ inch flats; $1\frac{1}{4}$ inch rounds and squares.

The average shop can not afford to be without the "American" Bending Machine.

The "American" Bending Machine is made of steel, weighs about 65 pounds and occupies very little space. It can be fastened on a post, wall or work bench. It has a four sided forming block which can be adjusted so as to give the work a sharp bend, a slightly rounded corner or a round bend. The forming block is also provided with a slot cut on one side which is of special advantage on some kinds of work. By setting a stop for the bending lever any desired angle may be formed and work made up according to pattern. The "American" Bending Machine is most useful and practical for Wagonmakers, Blacksmiths, Machinists, Iron and Sheet Metal Workers. Owing to its quick adjustment and rapid operation it is especially good for use with hot metals.

Write us for further particulars.

ROOFING TOOLS



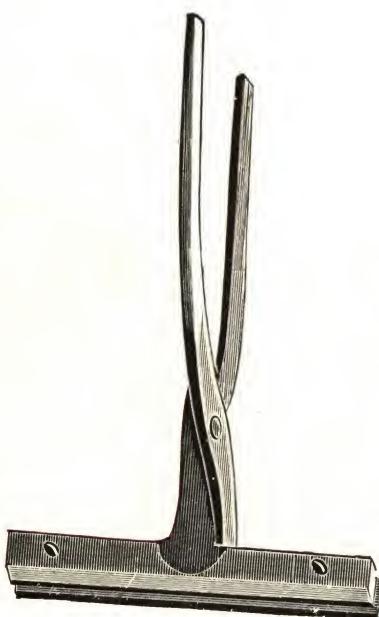
Hand Double Seamer



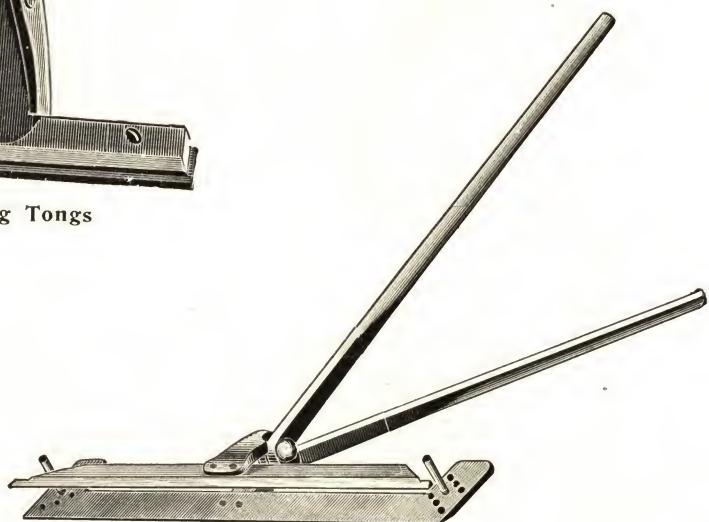
Gutter Tongs



Deep Throat
Roofing Tongs



Roofing Tongs



Adjustable Roofing Tongs

ROOFING TONGS—STEEL

Steel Roofing Tongs, sizes $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 inches; length of blades 18 inches; net weight about 15 lbs. per set; per set of two pairs.....	\$6.00
Please state sizes wanted.	
Set of 1 and $1\frac{1}{4}$ -inch tongs (common gauge)	
Set of $1\frac{1}{4}$ and $1\frac{1}{2}$ -inch tongs (wide gauge).....	

ADJUSTABLE ROOFING TONGS

These tongs will do the same work as six of the ordinary roofing tongs, while their price is but a trifle higher.

The adjustment is made by removing the pins shown on each side of the tongs, and screwing them into the proper holes corresponding with the size of standing-roof seam to be produced.

One pair of tongs will fold edges of $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 inches.

Adjustable roofing tongs, length of blades 18 inches, per pair.....	Net Weight	9 lbs.	\$4.00

GUTTER TONGS

Gutter tongs, length of blades 14 inches, depth of throat 14 inches, each..	Net Weight	.8 lbs.	\$4.00

DEEP THROAT ROOFING TONGS

These tongs are adjustable from $\frac{1}{2}$ -inch to 10 inches, varying by $\frac{1}{2}$ -inch. Two steel pins, which are screwed into holes the desired distance from the edge, serve as gauges. No measuring is required, the distance being marked on the frame. Length of blades 15 inches.

Deep throat roofing tongs, adjustable, per pair.....	Net Weight	11 lbs.	\$6.00

HAND ROOFING DOUBLE SEAMERS

Hand roofing double seamers, to match tongs, net weight about 15 lbs. per set, per set of two pairs.....	$\dots\dots\dots$	\$1.75
Please state size wanted.		



SQUEEZING TONGS

Used for compressing seams of roll cap and pressed standing seam roofing. Made of best cast iron, with pipe handles.

No. 2 press two indentations while squeezing the seam.

	Weight	Price
Squeezing tongs.....	15 lbs.	\$1.25
No. 2 Squeezing tons.....	15 lbs.	1.50

THE OHIO DOUBLE SEAMER



The Ohio Double Seamer



With Forming Tongs

Price, complete \$25.00

DOUBLE LOCK-SEAM

In making a double lock-seam, first form the iron with 1½-inch and 2-inch forming tongs, start the roof to the right of the building, if possible, and the 1½-inch side of the iron on the roof. Then nail the cleats and bend them over the 1½-inch side so as to hold it firm to the sheathing. Do not cleat over 18 inches apart at any time. Place the next sheet with 2-inch edge to the 1½-inch edge, and if the roof is steep, then lay your ladder on the last sheet that has been put on and start machine at the top, running it down with the rail on. Then go to the top and turn machine over, and you will see that it will be ready to lap up. Now, throw the rail out, which can easily be done while going to the top of the ladder, then go over seam just as you did before, and you have it finished.

You will find it an easy task to draw up your seam with an "Ohio Double Seamer" on account of the power of the machine.

PLENTY OF POWER

Do not work yourself to death—just take your time—you have the power and don't try to punch the iron to pieces, but stop and reason. You have ten tons pressure in forming andlapping up the iron, so it is useless to do more than raise and lower your hand lever.

A BIG ADVANTAGE

Herein lies another big advantage in the Ohio Double Seamer. The lever works out, and when it is down, the machine will always stay to seam leaving the use of one hand and both feet to move about, with no danger of accident due to loss of grip on the machine.

EITHER RIGHT OR LEFT-HAND

We frequently have inquiries as to whether the machine can be worked starting from the left, since we recommend starting at the right side of building. Certainly. That is one of the great advantages of double seam work. It makes no difference which way the seam is turned.

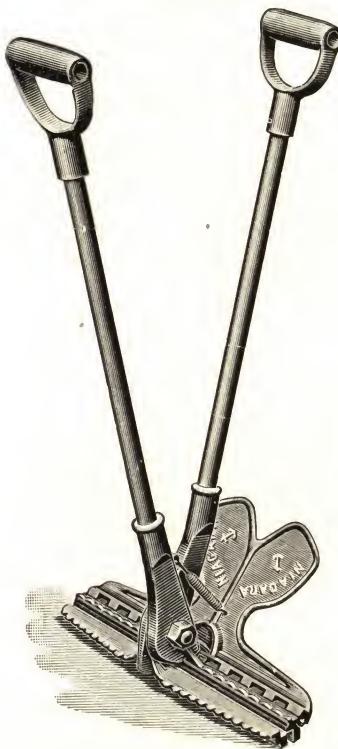
Starting at the left, the work is left handed, at the right, the work is right-handed, which is usually easier for the operator.

The double seam, furthermore, is the only safe way of putting on iron, and the only seam you can truthfully recommend to your customers.

CONTRACTORS' FRIEND

The "Ohio Double Seamer" has not been put on the market without being thoroughly tested. The inventor was a contractor for fifteen years and experienced all sorts of trouble getting men to put on iron on steep hip-roof buildings, and tried all kinds of machines.

BURRITT'S ROOFING DOUBLE SEAMERS—IMPROVED



Similar Seamers have been known to tinsmiths and roofers for many years. By reconstructing them on mechanical principles we have succeeded in making the seamers work easier and better.

The Improved Seamers are so made as to bend the edge down further than at right angle, to facilitate the closing down operation. The seamers do not crimp the tin, leaving the locks of uniform height.

They will double seam hips and ridges with ease, and seaming can be done much faster, easier and better than by hand and mallet.

The Seamers are fitted for IC tin, unless specially ordered for IX tin, in which case they will be made to follow 1½ and 1½-inch tongs.

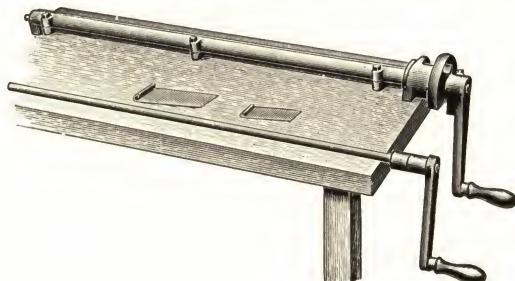
Common Gauge Seamers follow 1 and 1¼-inch tongs, finished seam ¾-inch high.

Wide Gauge Seamers follow 1¼ and 1½-inch tongs, finished seam 1-inch high.

Burritt's Roofing Double Seamers—Improved, weight 42 lbs., per set (2 pairs). \$18.00

When ordering, mention if Common or Wide Gauge Seamers are wanted.

NIAGARA SINGLE AND DOUBLE LOCK EDGER



This machine is intended for turning the edges of roofing sheets of tin for double or single lock. The edge is turned at one movement of the crank handle. Stops are provided to regulate the angle at which the edge is turned.

This machine can also be used as a gutter beader, and we furnish a rod, ½-inch diameter, for this class of work.

	Shipping Weight	Price
30-inch Niagara Single and Double Lock Edger, including one Edger and one Gutter Rod.....	30 lbs.	\$12.50

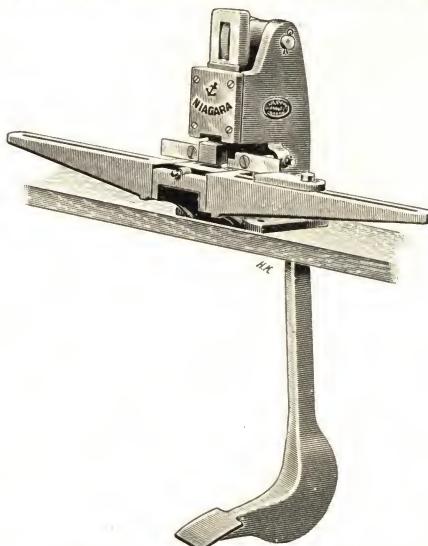
CORNER NOTCHING MACHINE



This machine is designed for cutting off the corners of roofing sheets, several sheets at a time, and for similar work. It has one fixed and one adjustable gauge, whereby the corners can be notched to any size required. The machine is worked by a treadle, allowing the operator to use both hands for handling the sheets of tin.

Corner Notchers, on iron legs,
shipping weight, 175 lbs.....\$26.00

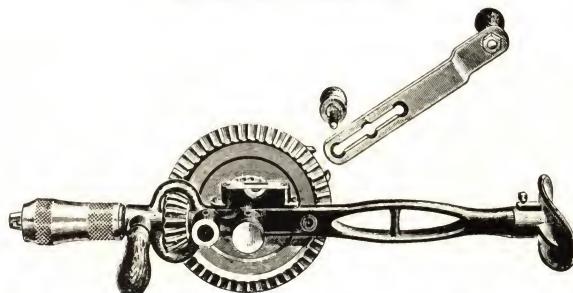
NIAGARA NOTCHING MACHINE



For notching the blanks of pieced ware for wiring or grooving; for cutting the corners and hinge notches of square boxes and cans, biscuit tins, and other similar work. It is operated by a foot treadle and has adjustable gauges, so that notches of any length and width can be readily cut, and all the pieces produced exactly alike.

Several thicknesses of tin can be cut at one stroke. Size of die, $1\frac{1}{2} \times 1\frac{1}{2}$ inches.

Niagara Notching Machine.....	Shipping Weight	Price
	180 lbs.	\$34.00

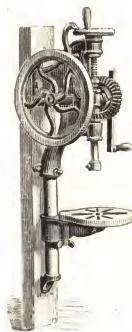
BREAST DRILLS

No. 12 ball bearings, cut gears, adjustable crank, N. P. chuck, japanned stalk, level attachment, cocobolo handles; the chuck has alligator jaws and holds round or square shanks. Gears changeable from even to speeded about 3 to 1. Packed one in a box.

Price..... Per dozen, \$30.00

SILVER'S ADVANCE DRILLS

Fast or Slow Speed



**Fig. 742, No. 12
Hand Power**



**Fig. 741, No. 12
Hand Power**



**Fig. 743, No. 13
Hand Power**

Dimensions—Fig. 742. Total height 45 inches; diameters: Table 8 inches; drive gear wheel, 6 inches; fly wheel, 14 inches; spindle, 1 inch; run of spindle, 3 inches; size of column, 1 $\frac{1}{8}$ inches; greatest distance of spindle to table, 14 $\frac{1}{4}$ inches; spindle turns 1 $\frac{1}{2}$ times to 1 turn of crank on fast speed; crank turns 1 $\frac{1}{2}$ times to 1 turn of spindle on slow speed; drills to center of 15-inch circle and up to 1 $\frac{1}{4}$ -inch holes; spindle bored for $\frac{1}{2}$ -inch round shank drills, unless otherwise ordered.

Fig. 741 is designed to fasten to a work bench, as shown. The supporting arm for drill table is adjustable up and down, and has a range of 12 inches, and the drill table swings to the right or left; in other respects it is the same as Fig. 742.

Dimensions—Fig. 743. Total height 50 inches; diameters: Table, 11 inches; drive gear wheel, 8 inches; fly wheel, 16 inches; spindle, 1 $\frac{1}{8}$ inches; run of spindle, 3 inches; size of column, 2 inches; greatest distance of spindle to table, 16 $\frac{1}{2}$ inches; spindle turns 1 $\frac{1}{2}$ times to 1 turn of crank on fast speed; crank turns 1 $\frac{1}{2}$ times to 1 turn of spindle on slow speed; drills to center of 18-inch circle and up to 1 $\frac{1}{4}$ -inch holes. Spindle bored for 1 $\frac{1}{2}$ -inch shank drills, unless otherwise ordered.

SIZES AND PRICES

Fig. 741, No. 12. Weight 125 lbs.....	\$10.00
Fig. 742, No. 12. Weight 125 lbs.....	10.00
Fig. 743, No. 13. Weight 175 lbs.....	16.00
Chuck for bit stock drills.....	1.00

POWER DRILL PRESSES

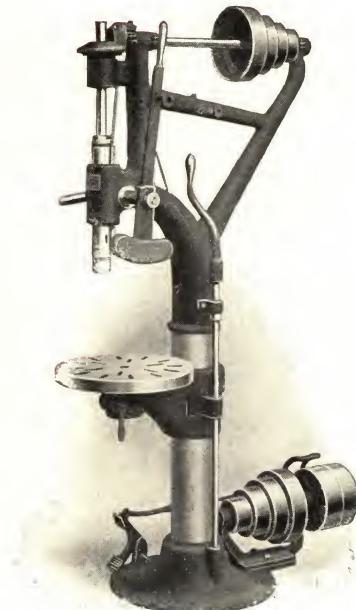


Fig. 855

Lever Feed

Round or Square Base

Fig. 855 with round base, complete as shown; weight, crated, 660 lbs.	\$ 85.00
V-shaped attachment to fit in supporting arm, for holding wheels to drill the tires.....	2.00
Wheel-holding attachment to clamp to column, with spindle to go through wheel	5.00
Fig. 856 with square base, otherwise same as Fig. 855; weight, crated, 700 lbs.....	90.00
Friction countershaft for tapping either style, extra	10.00

Power Feed with Back Gears and Automatic Stop

Round or Square Base

Fig. 862, with square base, complete as shown; weight, crated, 750 lbs.	\$135.00
Fig. 861, with round base, otherwise same as Fig. 862; weight, crated, 710 lbs.....	130.00
V-shaped attachment to fit in supporting arm, for holding wheels to drill the tires.....	2.00
Wheel-holding attachment to clamp to column, with spindle to go through wheel	5.00
Friction countershaft for tapping either style, extra	10.00

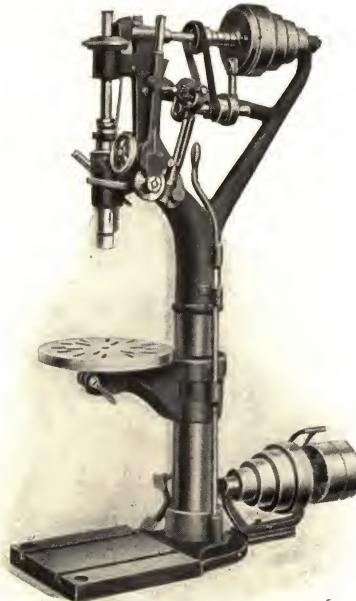


Fig. 862

PENDULUM FOOT PRESS NO. 42**No. 42. NIAGARA FOOT PRESS**

Adapted to a variety of small work, including cutting, punching, forming, etc.

The slide is long with V bearings and gib for adjustment. The stroke of the slide can be regulated by means of check nuts on the vertical screw above the slide.

Foot lever has horizontal and vertical adjustment to suit the convenience of the operator.

Number	42
Opening in bed, round.....	Inches 3
Distance from center of slide to back.....	" 3½
Distance from bed to slide when up.....	" 5½
Maximum stroke of slide.....	" 2
Usual hole in slide, round.....	" 1
Floor space over all.....	" 34 x 24
Weight complete	Lbs. 425
Price	\$.....

Price includes die holder.

No. 75. NIAGARA INCLINABLE FOOT PRESSES
OPEN BACK



These presses are adjustable to upright and inclined positions. The frames are so outlined as to combine strength with convenience in handling the material, and in setting the dies. The top lever is forged. The slide has long bearings properly fitted, to insure ease of operation, and adjustment is provided to take up wear. The hole in the bed can be altered to suit the requirements.

Nos.	73	74	75
Opening in bed.....Inches	6 x 10	7 x 12	8 x 14
Distance from center of slide to back....."	5	6	7
Distance from bed to slide, when up....."	6	7	7
Width of opening in back of press....."	6½	8	8½
Maximum stroke of slide....."	1½	2	2
Usual hole in side, round....."	1½	2	2
Floor space over all.....	21 x 46	24 x 53	26 x 59
Weight, complete ..Lbs.	475	750	1000
Price	\$.....	\$.....	\$.....

Price includes bolster-plate and bolts.

NIAGARA PENDULUM FOOT PRESSES NOS. 80 AND 82



No. 80

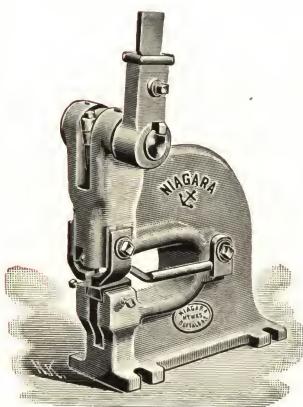


No. 82

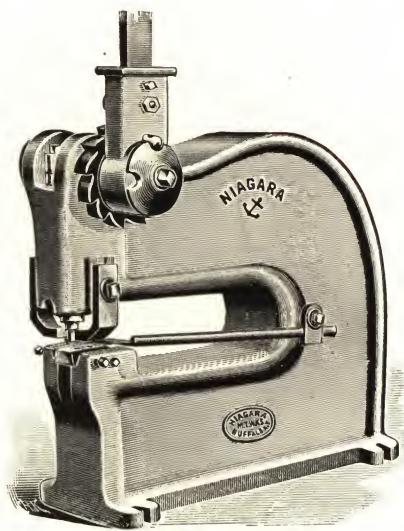
They are useful in the manufacture of small stampings, brass goods, trimmings, etc. The press heads and levers are substantial. The slide is of Δ shape, and scraped to a fit. The adjustment of the slide is made by means of the cap. Cap screws are used to draw up the cap and set screws to check the adjustment.

Nos.		80	82
Opening in bed.....	Inches	3 x 3	5 x 5
Distance from center of slide to back.....	"	3½	4¾
Distance from bed to bottom of slide.....	"	5	5
Maximum stroke of slide.....	"	2	2
Hole in slide.....	"	1	1¼
Floor space over all.....	"	14 x 30	16 x 36
Weight	Lbs.	200	445
Price	\$.....	\$.....	\$.....

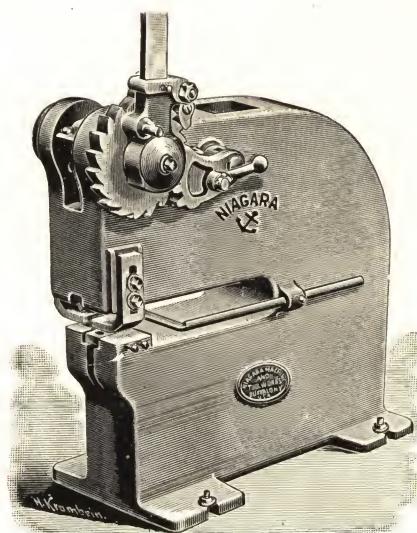
Price includes bolster-plate and bolts.

NIAGARA LEVER PUNCHES

No. 12



No. 24



No. 34

NIAGARA LEVER PUNCHES

Nos. **11** to **18**—The lever is short and works both ways. The machine has sufficient strength to punch a hole $\frac{1}{4}$ -inch diameter through iron $\frac{1}{4}$ -inch thick or equivalent; $\frac{1}{8}$ and $\frac{1}{4}$ -inch holes can be punched in angle iron provided the center of the hole is not less than $\frac{5}{8}$ -inch from the inner corner. An adjustable gauge is applied to regulate the distance of the holes from the edge of the sheet, also a stripper.

Three punches— $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{1}{2}$ -inch diameter—and one die to match are included in the price.

		Throat	Weight	Price
No. 11	Niagara lever punch.....	4 in.	100 lbs.	\$12.50
No. 12	" "	6 in.	115 lbs.	15.00
No. 13	" "	10 in.	140 lbs.	17.50
No. 14	" "	15 in.	220 lbs.	20.00
No. 16	" "	25 in.	375 lbs.	30.00
No. 18	" "	36 in.	550 lbs.	40.00

The die-holder is now made separate from frame.

Nos. **21** to **28**—These machines are intended for heavy work; $\frac{1}{4}$ and $\frac{3}{8}$ -inch holes can be punched in angle iron, provided the center of the hole is not less than $\frac{5}{8}$ -inch from the inner corner.

Can be operated with or without ratchet, and the change is made quickly and easily. Without the ratchet the lever works towards the front; with the ratchet it works towards the back of the machine.

Stripper and back gauge are provided.

Will punch, without ratchet, $\frac{1}{2}$ -inch hole through $\frac{1}{4}$ -inch iron, or equivalent.

Will punch, with ratchet, $\frac{1}{2}$ -inch hole through $\frac{3}{8}$ -inch iron, or equivalent.

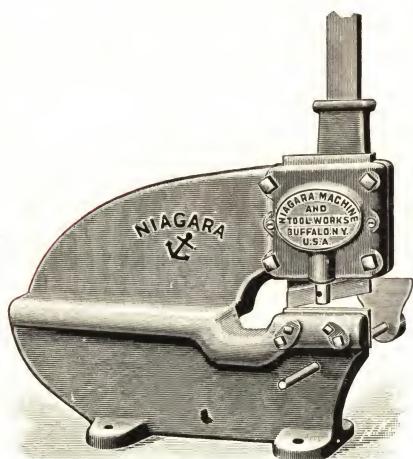
Three punches— $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ -inch diameter—and one die to match are included in the price of Nos. 21 to 28. Die and punches for $\frac{1}{2}$ and $\frac{5}{8}$ -inch go with No. 34.

		Throat	Weight	Price
No. 21	Niagara lever punch.....	4 in.	175 lbs.	\$ 20.00
No. 22	" "	6 in.	240 lbs.	24.00
No. 23	" "	10 in.	375 lbs.	32.00
No. 24	" "	15 in.	530 lbs.	40.00
No. 26	" "	25 in.	950 lbs.	70.00
No. 28	" "	36 in.	1675 lbs.	105.00
No. 34	" "" capacity $\frac{5}{8}$ -in. hole in $\frac{5}{8}$ -in. iron	15 in.	1300 lbs.	100.00

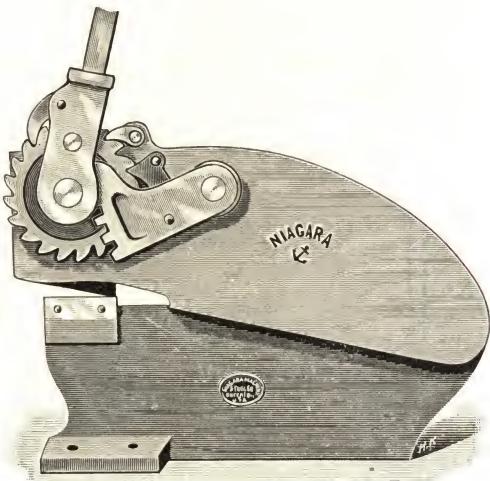
The die-holder is now made separate from frame.

NIAGARA LEVER SHEARS

FOR CUTTING PLATE IRON OF ANY WIDTH AND LENGTH



No. 13



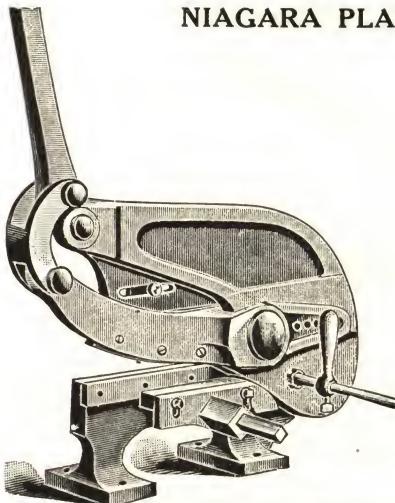
No. 15

These are excellent machines for cutting sheet iron of any length and width in places where power squaring shears would be too high in price. The lever works to the front, so that one operator can use the machine. All the parts are well fitted. The knives are readily removed and ground. The frame is cut back to allow the sheet to pass freely.

No. 15 can be operated at three different speeds, viz: With the lever acting direct on the slide for light work; or with the ratchet and pawl for plates of medium thickness; or with compound lever for heavy work. One man can operate the machine when using it to its utmost capacity. The frame carries a device, working on springs, that crowds between the two parts of the sheet. At the upstroke of the knives it holds them apart and gives the operator a chance to move the sheet forward without difficulty for the next cut. The knives are adjustable for wear, and an adjustable gauge is provided, besides the hold-down that prevents the material from rising while being cut.

	Length of Knives	Weight	Price
No. 13 Niagara lever shears will cut $\frac{1}{4}$ plate iron....	4½-inch	285 lbs.	\$25.00
No. 14 Niagara lever shears will cut $\frac{3}{8}$ plate iron....	5 -inch	480 lbs.	40.00
No. 15 Niagara lever shears will cut $\frac{1}{2}$ plate iron....	6 -inch	800 lbs.	90.00
Iron legs for Nos. 13 and 14, extra.....			5.00
Iron legs for No. 15, extra.....			10.00

NIAGARA PLATE AND ROD SHEARS



These machines are operated by a powerful toggle mechanism. They are durable, and especially adapted to cutting sheets of any length and width, as well as bars. Each machine is fitted with adjustable gauges for sheet and rod cutting, and a vertical hold-down to prevent the sheet from rising while being cut.

Nos.		1	2	3
Length of knives.....	Inches	10	10	10
Will cut plate iron up to.....	"	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$
Will cut flat iron up to.....	"	$\frac{1}{4} \times 3$	$\frac{5}{16} \times 3$	$\frac{3}{8} \times 3$
Will cut round iron up to.....	"	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Weight	Lbs.	165	220	325
Price		\$32.00	38.00	45.00
Iron legs, extra.....		5.00	5.00	5.00

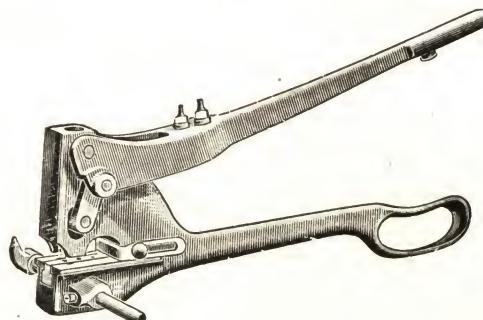
WIRE AND ROD CUTTER



These are very handy tools for cutting round wire and bars. There is an adjustable gauge so that any number of shorter pieces can be cut the same length without having to measure each piece.

	Weight	Price
No. 0 Wire and rod cutter, holes in die $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$ -inch diam....	5 lbs.	\$ 4.00
No. 3 Wire and rod cutter, holes in die $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ -inch diam....	55 lbs.	12.50
No. 5 Wire and rod cutter, holes in die $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ -inch diam....	110 lbs.	25.00
No. 8 Wire and rod cutter, holes in die $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, 1, $1\frac{1}{8}$ in. dia.	350 lbs.	70.00

PORTABLE LEVER PUNCH



The plunger of this handy machine is operated by a powerful toggle movement. All parts are made of malleable iron and steel, in order to combine strength with the least possible weight. Back and side gauges are provided.

Depth of throat, $1\frac{3}{8}$ inches; distance from center of slide to face, $1\frac{1}{8}$ inches.
Will punch $\frac{1}{4}$ inch hole through No. 18 iron.

Three punches and one die for holes $\frac{1}{8}$, $\frac{3}{16}$ and $\frac{1}{4}$ -inch diameter are sent along.
Portable lever punch, weight 8 lbs.....\$6.00

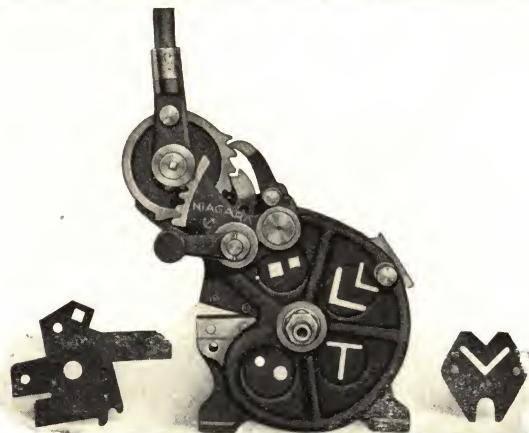
COMBINED SHEARS AND PUNCHES



These machines are suitable for cutting and punching metal. Sheets of any length and width can be cut apart. In shearing, as well as punching, the lever works toward the operator. No. 224 has separate lever movements for the punch and shear parts.
No. 2 will cut $\frac{1}{8}$ -inch iron; will punch $\frac{1}{4}$ -inch hole through $\frac{1}{8}$ -inch iron.
No. 3 will cut $\frac{1}{8}$ -inch iron; will punch $\frac{1}{4}$ -inch hole through $\frac{1}{4}$ -inch iron.
No. 224 will cut $\frac{3}{8}$ -inch iron; will punch $\frac{1}{2}$ -inch hole through $\frac{3}{8}$ -inch iron.
Cutting length of No. 2, 5 inches; No. 3, $8\frac{1}{2}$ inches; No. 224, 5 inches.
Throat of punch—No. 2, $3\frac{1}{2}$ inches; No. 3, 5 inches; No. 224, 6 inches.

	Weight	Price
No. 2 Combined shear and punch, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$ punches.....	150 lbs.	\$20.00
No. 3 Combined shear and punch, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$ punches.....	300 lbs.	35.00
No. 224 Combined shear and punch, $\frac{3}{8}$ and $\frac{1}{2}$ punches.....	550 lbs.	80.00

UNIVERSAL SHEARS FOR PROFILES AND BARS



Arranged for cutting off angle iron, "T" iron, round, square, and flat bars, the capacity being as follows:

Angle Iron	up to	$2\frac{1}{2}$ in. x $\frac{3}{8}$ in.
"T" Iron	"	$2\frac{1}{2}$ in. x $\frac{3}{8}$ in.
Round Bars	"	1 in.
Square Bars	"	1 in.
Flat Iron	"	$4\frac{1}{2}$ in. x $\frac{5}{8}$ in.

The frame of the machine is a steel casting. The hold-down attachment holds the material while being cut off.

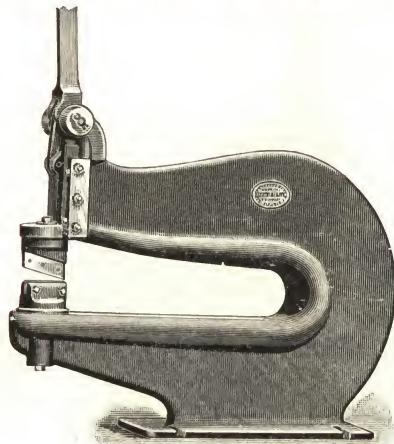
	Shipping Weight	Price
Universal Shears for profiles and bars.....	390 lbs.	\$125.00

No. 4. NIAGARA BAR SHEARS



Will cut round iron up to, inch.....	$\frac{7}{8}$
Will cut flat iron up to, inches.....	$\frac{3}{8} \times 2$
Length of knives, inches.....	$3\frac{3}{4}$
Weight, lbs.	180
Price with straight knives.....	\$35.00
Price with knives for angle iron $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$	40.00

NIAGARA DEEP THROAT LEVER SHEARS AND PUNCHES



Will Cut Iron or Soft Steel Up to $\frac{1}{8}$ -inch Thick

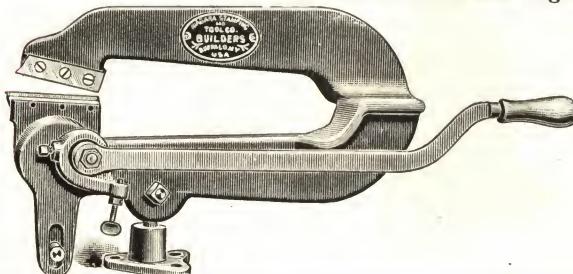
The Shears are particularly adapted to range work. On account of the deep throat they can be used for cutting holes in large sheets. The knives are arranged to swivel, which permits of cutting from front to back, right to left, or at any desired angle, according to the nature of the work. The position of the knives can be changed quickly. The V-shaped slide is well fitted, and provided with adjustable gib to compensate for wear. The knives are 4 inches long, and each of them has two cutting edges which can be used alternately.

These machines can be arranged for punching small holes, the capacity being $\frac{1}{4}$ -inch hole through $\frac{1}{8}$ -inch iron, or equivalent.

	Shipping Weight	Price
Niagara Deep Throat Shears, 18-inch throat.....	300 lbs.	\$35.00
" " " 24-inch "	400 lbs.	40.00
" " " Punch, 18-inch "	300 lbs.	35.00
" " " 24-inch "	400 lbs.	40.00
Iron table and legs.....	90 lbs.	6.00
Price of holders, stripper, punches and die for $\frac{1}{8}$, $\frac{3}{16}$ and $\frac{1}{4}$ -inch holes for use on Deep Throat Shears in place of the knives.....		10.00

SCROLL SHEARS

For No. 20 Iron and Lighter



Will cut ovals, ogees, irregular shapes and patterns of all kinds, with ease. Distance from knives to frame, $1\frac{1}{2}$ inches. Knives 4 inches long.

	Shipping Weight	Price
No. 1 Scroll Shears, as shown in cut.....	90 lbs.	\$20.00
No. 2 Scroll Shears, knives at right angle to frame.....	90 lbs.	24.00

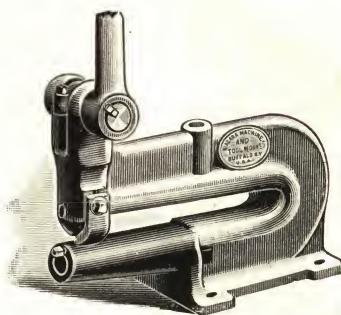
No. 44. NIAGARA LEVER PUNCH

The round end of the base, in which the die is inserted, permits of punching holes in pipe $4\frac{1}{4}$ inches diameter and larger, up to 7 inches from the end. A stay bolt is used to increase the capacity of stiffening the frame.

Without stay bolt will punch up to 15 inches from the edge of sheets No. 12 gauge and lighter.

With stay bolt will punch up to 7 inches from the edge of sheets No. 9 gauge and lighter.

Punches and dies for holes $\frac{1}{8}$, $\frac{3}{16}$ and $\frac{1}{4}$ -inch diameter are sent along.



	Shipping Weight	Price
No. 44 Niagara Lever Punch.....	150 lbs.	\$18.00

EXTRA PARTS FOR LEVER PUNCHES AND SHEARS

The following prices apply to standard sizes only. Special sizes are charged for at special prices:

EXTRA PUNCHES

to Nos. 11 to 18, 21 to 28, 122A, 124A, No. 44 and Deep Throat Combined Shears and Punches Nos. 2, 3 and 224, each.....	\$0.50
No. 34 and Portable, each.....	.75

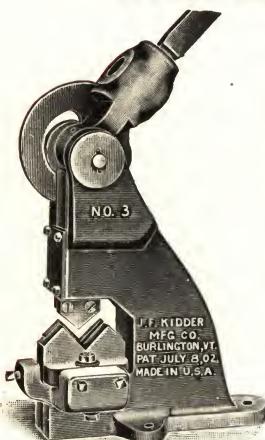
EXTRA DIES

to Nos. 11 to 18, 21 to 28, 122A, 124A, No. 44 and Deep Throat Combined Shears and Punches Nos. 2, 3 and 224, each.....	\$1.25
No. 34, each.....	1.50
Portable, each .....	.75

EXTRA KNIVES

to Lever Shears Nos. 13 and 14, per pair.....	\$3.50
Combined Shears and Punches Nos. 2 and 224, per pair.....	3.50
Deep Throat Lever Shears, per pair.....	3.50
Plate and Rod Shears Nos. 1 to 3, upper.....	3.50
Plate and Rod Shears Nos. 1 to 3, lower.....	2.50
Lever Shears No. 15 and Combined Shears and Punch No. 3, per pair...	4.00
Scroll Shears, per pair.....	2.50
No. 4 Bar Shears, per pair.....	4.00

LITTLE BLACKSMITH ANGLE IRON CUTTER

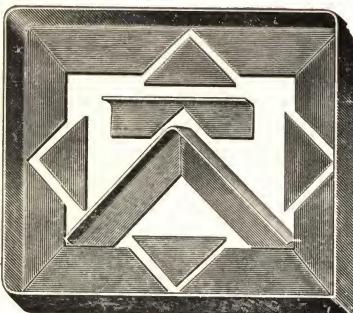


This angle iron cutter was designed to meet the requirements of the shop consuming a great amount of angle iron within its range. Will shear angle iron $2\frac{1}{4} \times \frac{1}{4}$ in.

Will shear flat iron $2\frac{1}{4} \times \frac{1}{4}$ in.

Will slot angle iron $2\frac{1}{4} \times \frac{1}{4}$ in.

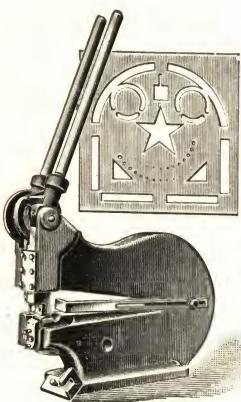
Weight 325 lbs.



Price, both attachments \$55.00
Price with one attachment 40.00
Shear blades, each 1.00

(3 shear blades per set)

LITTLE BLACKSMITH COMBINATION DEEP THROAT PUNCH AND SHEAR No. 16



The design above the machine was punched and cut out on our "Little Blacksmith" combination deep throat punch and shear No. 16, out of No. 12 gauge iron. The circles are four inches in diameter.

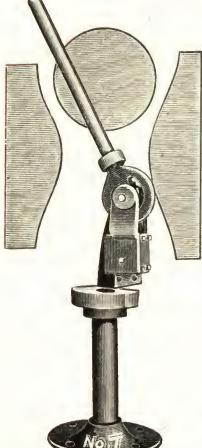
It will cut the inside and outside of practically any size circle, and will shear pieces for elbows, or angles of any degree. It is especially convenient in cutting forms of intricate design. The punch in no way interferes with the shear, or vice versa. The member not in use is up and out of the way of the other.

The punch is fitted with our quick changing punches and dies, and has a capacity up to $\frac{1}{8}$ -inch, advancing by 32ds.

Capacity—Half inch hole in No. 12 iron without stay bolt; shear No. 12 iron without stay bolt; punch $\frac{3}{8}$ inch in $\frac{1}{4}$ inch with stay bolt; shear $\frac{1}{4}$ inch with stay bolt. Depth of throat 16 in. Weight 275 lbs.

Price \$60.00

LITTLE BLACKSMITH SLITTING SHEAR No. 7



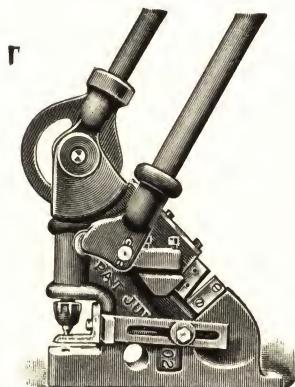
This machine is designed to cut sheets of any length, either straight or to irregular pattern.

The lever ordinarily works to the front, but can readily be changed so that helper can work it from the rear when cutting large sheets. The regular height of machine is 32 inches. The pedestal is a standard 2-inch pipe terminating in a cast iron base 12 inches in diameter. A floor plate 12 x 12 inches can be substituted for this base, and when set in flush with the floor, and the pedestal unscrewed from it, leaves nothing in the way. The machine is simple in operation, and will shear No. 12 stock easily. Width of blade 3 in. Weight 75 lbs.

Price, steel body \$28.00

LITTLE BLACKSMITH PUNCH

Nos. 0A, 1 and 2

**Capacity—Wrought Iron and Soft Steel**

	Punch	Shear	Bend	Weight	Lever Length	Price
No. 0A	$\frac{1}{4}$ $\frac{1}{16}$ in.	$\frac{1}{4} \times 1\frac{1}{2}$	$\frac{1}{8} \times 1\frac{1}{2}$	35 lbs.	16 in.	\$28.00
No. 1	$\frac{5}{16}$ $\frac{1}{4}$ in.	$\frac{3}{4} \times 2$	$\frac{1}{4} \times 2$	70 lbs.	26 in.	35.00
No. 2	$\frac{3}{8}$ $\frac{3}{8}$ in.	$\frac{3}{8} \times 3$	$\frac{3}{8} \times 3$	280 lbs.	48 in.	55.00

EXTRAS FOR THE LITTLE BLACKSMITH**For No. 0 A Machine**

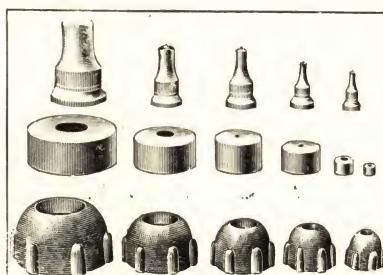
Punches, $\frac{1}{8}$ to $\frac{1}{2}$ in., list each.....	\$0.50
Dies, $\frac{1}{8}$ to $\frac{1}{2}$ in., list each.....	1.00
Shear blades, list each.....	.50

For No. 1 Machine

Punches, $\frac{1}{8}$ to $\frac{1}{8}$ in., list each.....	\$0.60
Dies, $\frac{1}{8}$ to $\frac{1}{8}$ in., list each.....	1.25
Shear blades, list each.....	.75

For No. 2 Machine

Punches, $\frac{3}{16}$ to $1\frac{1}{16}$ in., list each.....	\$1.25
Dies, $\frac{3}{16}$ to $1\frac{1}{16}$ in., list each.....	2.50
Shear blades	1.00

PUNCHES, DIES AND COUPLINGS

THE VULCAN



This is a combination shear, punch and bending machine. If you use metal—round, square, flats or angles, cut, punched or bent—you cannot afford to overlook this wonderful new machine.

It will punch a $\frac{1}{16}$ -inch hole through $\frac{1}{4}$ -inch steel. It shears $\frac{1}{4} \times 2$ -inch steel, $\frac{1}{2}$ -inch round, and $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$ -inch angle iron. It bends $\frac{1}{4} \times 2$ -inch steel and with the additional dies a great variety of work can be done on this machine.

Five sizes of punches and dies are furnished with each machine—one die and two punches of each size from $\frac{1}{16}$ -inch to $\frac{1}{4}$ -inch. Two die blocks are furnished to facilitate the punching of small angles. When different sizes of holes are to be punched it is only necessary to change the punches and dies. The machine is always ready for work.

No machine, blacksmith, ornamental iron, automobile, light structural, or sheet iron shop can afford to be without the Vulcan.

The Vulcan is made entirely of steel, weighs 100 pounds, stands $17\frac{1}{2}$ inches high, and is 6×11 inches at the base. The cut clearly illustrates its various operations. This machine is made of the very best material, by skilled workmen, and is fully guaranteed.

Price each, f. o. b. factory.....\$65.00

THE HERCULES

This machine cuts sheet and plate steel just the way you want them cut—and quickly. It cuts angles and bars of any size—cuts the metal straight or curved—in elbows, tees, etc., miters and notches angle iron.

These machines are secured to the bench with four machine bolts, which are provided.

The Small Hercules cuts as heavy as $\frac{1}{8}$ -inch steel. It weighs 40 pounds, has 4-inch blades and occupies a space of $6 \times 10 \times 8$ inches. The lever is 30 inches long.

Price each\$25.00

The Large Hercules cuts as heavy as $\frac{1}{4}$ -inch steel, weighs 190 pounds, has 6-inch blades and occupies a space of $8 \times 15 \times 13\frac{1}{2}$ inches. The lever is 72 inches long.

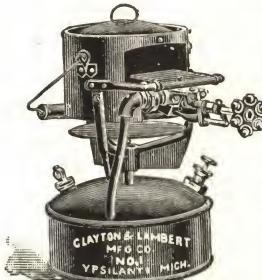
Price each\$50.00

Shears f. o. b. factory.



SOLDERING FURNACES

No. 1 FIRE POT FOR TINNERS



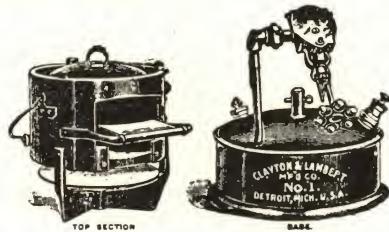
In the No. 1 we offer the trade the result of our long experience, special skill, and determination to make the best fire pot on earth. They have every improvement that improves; are always in advance of others.

The latest improvement added to this fire pot is the brass air pump, which is a surprise to all who see it.

The flame is so directed as to heat the coppers from heel to point, thus avoiding the common trouble of burning off the tinning. The burner, being outside the hood, does not get clogged or eaten out by drippings. Each burner has clean-out plugs which make it easy to keep in order.

No. 1 is the only gasoline fire pot that gives sufficient heat for brazing. It will melt forty pounds of solder in twenty minutes, and will heat a pot of metal and a pair of coppers at the same time.

The second cut shows the fire pot with head removed, exposing the open flame for torch or brazing purposes. The burner is movable; works equally well in any position; the flame is under perfect control of the operator, and he can obtain a heat soft and mild or very intense, at his option.



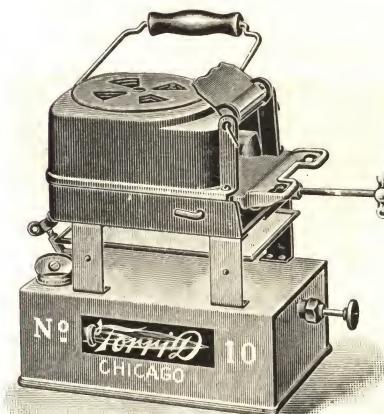
Price, net \$6.00

SPECIAL No. 5 FOR TINNERS

The No. 5, not shown, is exactly like the No. 1, except that it is smaller, being 8 inches in diameter and $11\frac{5}{8}$ inches high, the tank holding 5 pints.

Price, net \$4.50

TORRID FURNACE



The Torrid square furnace, as shown by the accompanying cut, is especially constructed for sheet metal workers' use. It is equipped with a cast "HORSE SHOE" burner, burning from each side toward the center, giving the benefit of a TORRID BLUE FLAME in heating contact with one or two coppers. Has GREATEST RANGE in heating, namely, 3 to 12-pound coppers, indoors or on a roof.

Capacity of tank.....	1 gallon
Consumption of gasoline per hour, full blast	$\frac{3}{4}$ pint
Height	11 $\frac{1}{2}$ inches
Weight	15 pounds
Weight, boxed	25 pounds

Price, No. 10 \$6.50



THE NO. 31 TORCH

Has no equal where intense heat is desired, especially for work in the wind. It is well made. The tank holds one quart, and is fitted with our best pump. The burner is a powerful generator, producing a strong blast heat, consuming little gasoline.

When we say to you, "Your money back if you are not pleased," it means that we have carefully tested them, and that you run no risk in buying. Don't forget that you buy fuel all the time, and that a saving in this item means much to you. Try one.

Price, polished brass, \$3.75 net.



THE NO. 32 TORCH

Is exactly like the No. 31, except that it is fitted with hook and support for holding soldering coppers. The users of torches who may have occasion to use soldering coppers will appreciate this point.

Price, polished brass, \$4.00 net.



THE NO. 37 TORCH

Is without question the best pint size torch made in this country. The tank holds one pint, is constructed the same as our No. 31 and is fitted with our best pump. The burner is a strong generator which produces a blue needle point flame which is intensely hot and is not affected by wind or zero weather. The needle point is double shouldered, bringing the seat back in the solid metal, which makes it more durable than burners fitted with tapered shoulders which continually enlarge or ruin the needle seats. Please note that this type of burner does not expose the gasoline or vapor to wind or cold, as the orifice through which gas flows is shielded by the burner tube. The No. 37 Torch will save the user its cost in a short time in the saving of gasoline alone. Try it. Your money back if you are not pleased.

Net price each, polished brass, \$3.25.

COIL FIRE POTS Nos. 10 AND 20

The No. 10 Coil Fire Pot is thoroughly well made, the tank being made of heavy galvanized iron, and the valves made with needle points, which give the user better control of the fire and are more durable than those having ground keys.

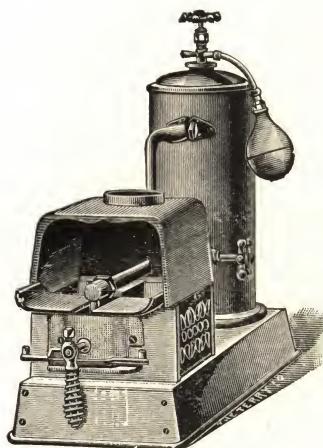
Price, as shown, \$3.75 net.

The No. 20 Fire Pot is exactly like the No. 10, except that it is fitted with the latest improved brass air pump, which is much better than the air valve and rubber bulb ordinarily used.

Price, \$4.00 net.



SOLDERING FURNACES



TINNERS' AND ROOFERS' FURNACE

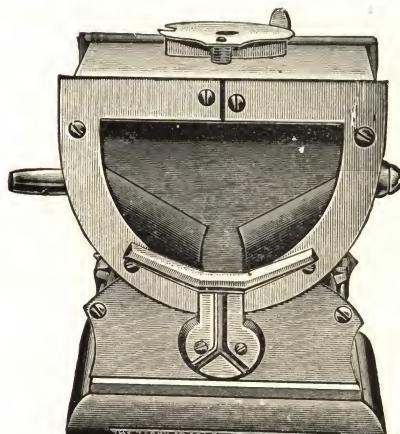
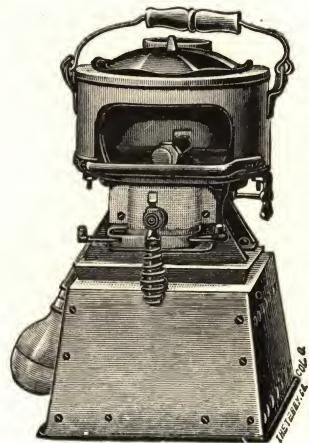
GEM No. 3

	Price List	Net
No. 3 Gem, tin reservoir.....	\$7.50	\$....
No. 3 Gem, copper reservoir.....	8.50	....
No. 3 Gem has a 4-inch burner.		
Plumbers' attachments extra.		
Weight, 15 pounds; crated for shipment, 20 pounds.		
<i>Discount.....per cent.</i>		

ELECTRICIANS', PLUMBERS' AND TINNERS'
FURNACE

GEM No. 6

	Price List	Net
No. 6 Gem, IXXXX tin reservoir.	\$7.50	\$....
No. 6 Gem, 16 oz. cop. reservoir..	9.00	....
No. 6 Gem has a 4-inch burner.		
By removing top cover, metal pots can be used.		
Electricians' and plumbers' attachments extra.		
Weight, 15 pounds; crated for shipment, 20 pounds.		
<i>Discount.....per cent.</i>		



THE GEM GAS POT

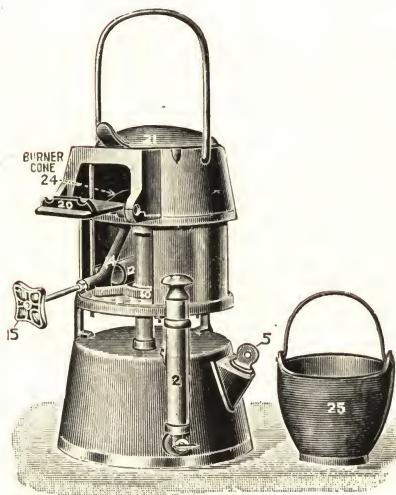
List, each	\$4.80
Net, each .....	....

When ordering, state whether artificial or natural gas is to be used.

Discount.....per cent.

RELIABLE TINNERS' AND PLUMBERS' FURNACE

No. 196



No tinner or plumber should be without it.

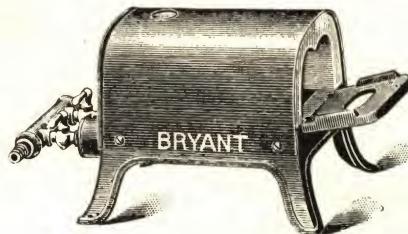
The Reliable Plumbers' and Tinners' Furnace is without doubt the best furnace made. It is equipped with a powerful burner which permits of its doing the same work in one-half the time of any other furnace. It is simple in construction, easy to operate, light in weight, equally well adapted for both inside and outside work, and will outlast any other make of furnace.

Particular attention is called to the shield which surrounds burner, protecting the latter from all draught.

Price, No. 196.....\$7.00

Discount.....per cent.

BRYANT GAS SOLDERING FURNACE



The Bryant Furnaces are made with heavy fire brick linings.

Adjustable gas mixers.

Can be connected either right or left with $\frac{1}{4}$ -inch iron pipe or hose.

Can be used on either natural or manufactured gas.

No. 10. Single Burner	\$5.00 list
No. 20. Double Burner	6.00 list

Discount.....per cent.

THE "SUPERIOR" GAS SOLDERING FURNACE



For Natural, Illuminating or Producer Gas

The gas consumption for the double burner Nos. 2 and 4, with both the burners at full blaze, is about 12 feet an hour with ordinary gas pressure, but after the irons have become hot and if the work is not too heavy, one can reduce the gas consumption by turning down the faucets a little or by using only one burner, which consumes just half as much gas, or about six feet an hour. This matter may, of course, be regulated according to the gas pressure.

SIZES

	Price
No. 1, single burner, with cast iron top.....	\$3.00
No. 2, double burner, with cast iron top.....	4.00
No. 3, single burner, with firebrick.....	4.00
No. 4, double burner, with firebrick.....	5.00
<i>Discount.....</i>	<i>per cent.</i>

THE PENNSYLVANIA SOLDERING FURNACE

It is the Most Economical Gas Soldering Furnace on the Market

It saves fuel.

It saves time.

It is heavily built and will outwear all others.

Its burners are equipped for all kinds of gas, can be turned very low and will not flash back; gives perfect combustion.

The fine blue flame from the burners strikes the soldering coppers direct, utilizing all the heat units in the gas.

The construction is such that there is no chance for dirt to accumulate, and the solder that drops will not fill up the burner.

The top is removable, allowing the furnace to be used for every purpose in soldering.

The valves may be placed in the front or at the back as desired.



No. 4—Price \$3.50 each.

This furnace is best adapted for general soldering purposes. It differs from any other furnace. It has two chambers, entirely separate, being covered with a hood of firebrick having a centre partition. Each has a burner and either can be used single, or both can be used at the same time. One will light from the other.

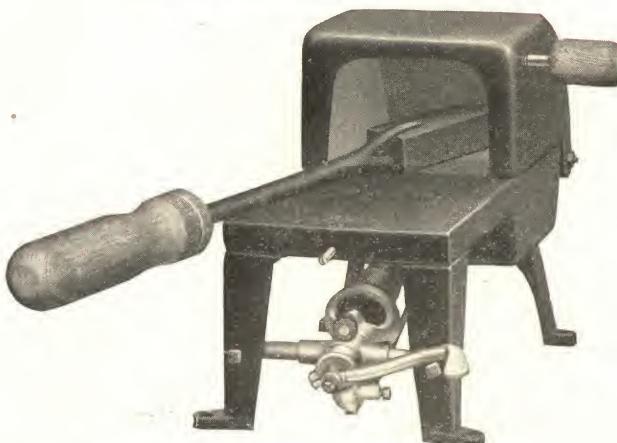
No. 5—This is the same furnace as our No. 4 with the partition removed. It allows three soldering irons to be heated at one time.

No. 5—Price \$3.50 each.

No. 2—This furnace is for small work, allowing for only one soldering iron, and is particularly adapted for electricians and telephone companies.

No. 2—Price \$2.50 each.

Discount.....

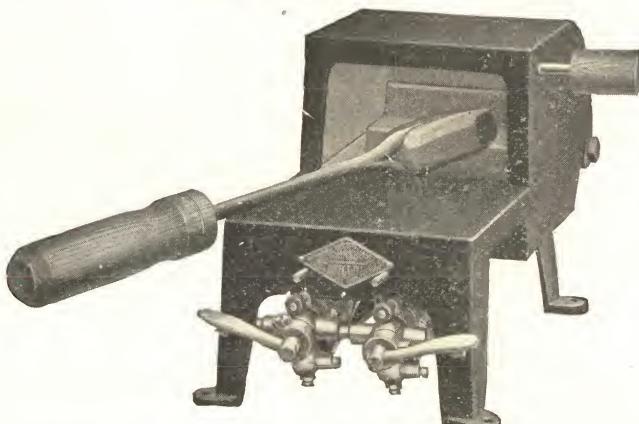
JOHNSON FURNACE NO. 1

Fire pot opening, $3\frac{1}{2} \times 2\frac{1}{2}$. Length, 12 in. Weight 12 lbs.

The Johnson patented hood forces a return blast over the irons, thus securing double service from entire volume of heat and equal temperature on all sides. Perfect combustion keeps the irons clean. Inside shelf protects the points. All Johnson appliances have pilot light.

A powerful hot blast without the need of a blower. Consumes 10 feet of gas per hour. Thousands now in daily use; approximately 2,000 degrees of heat instantly.

Price each	\$7.50
<i>Discount.....</i>	<i>per cent.</i>

NO. 101 FURNACE

Opening, $4\frac{1}{2} \times 2\frac{3}{4}$ in. Length, 14 in. Weight, 18 lbs.

Most powerful atmospheric gas furnace yet produced. Fire pot super-heated with two Bunsens which can be used independently. Heats the iron, not the workman. Consumes 10 to 20 feet of gas per hour.

Price each	\$10.00
<i>Discount.....</i>	<i>per cent</i>

NO. 2 ADJUSTABLE BUNSEN



Height 9½ in.; Base 6 in.

Weight 5 lbs.

A powerful blow torch, indispensable for shop or laboratory. Adaptable to a score of uses. Same powerful Bunsen as in No. 1 furnace.

Price \$5.00

Cut shows cast iron top removed to hold object for torch which is adjustable up and down and at any angle. Can be detached and used as hand torch in sweating, brazing, or soldering. Easily carried and attached with rubber tube.



HANDY BUNSEN NO. 3

Height 7 in.; base 5 in.

2,000 degrees of heat with 5 feet gas per hour. Gives every work bench the same service as a costly blower.*

Price \$4.00

*Adapted especially for laboratory work.

NIAGARA POWER SQUARING SHEARS

GENERAL DESCRIPTION

The Niagara Power Squaring Shears embody all improvements that have been found of real value in machines of this character. Only the best of materials, properly distributed, are used in their construction. The wearing surfaces are large and adjustments are provided to take up wear. The proportions are ample, so as to avoid undue strain. All parts are carefully fitted.

Length of cut. Our Power Squaring Shears cut fully the lengths mentioned and overrun about 1 inch. The housings are far enough apart that sheets in width equal to the cutting length can be passed through from front to back without obstruction.

Bed is bolted to the housings and it can be shifted on its seats towards or away from the upper knife.

Gears are cut from solid material.

Holddown works automatically. It exerts pressure upon the sheet while being cut and raises quickly when the cut is made. Several openings in the holddown enable the operator to see the cutting line.

Knives are made of high-grade steel welded to iron, the steel being properly hardened. The knives are ground true and fit without lining. They can be easily removed for grinding, and provision is made for taking up wear.

Gauges. The Shears are furnished with a set of front, back, bevel and side gauges. The back gauge which is carried on brackets fastened to the cutter bar, can be set close up to the lower knife so that narrow strips can be gauged. The table and brackets for front gauge have T slots. A graduated scale divided in $\frac{1}{16}$ inches is marked on the bed.

Back gauge is mounted on Micrometer Gauge Holders, see page 421, permitting of fine adjustment.

In place of the ordinary back gauge, we can furnish, at extra cost, our improved automatic back gauges which move parallel to the knives and can be set by the operator from either end of the machine.

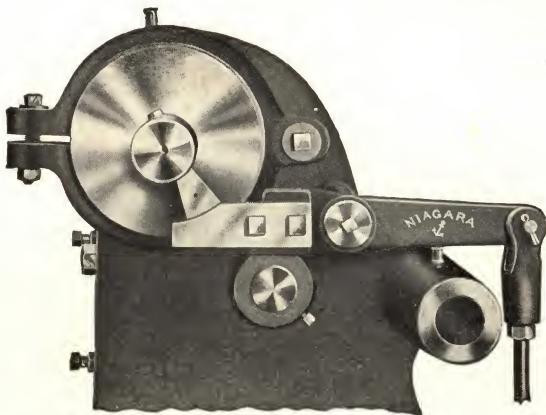
Clutch. The motion of the Shears is controlled by the Niagara Shear Clutch, illustrated and described on page 421.

Foot Treadle for tripping the clutch, extending the entire length of the machine, is used on Shears 62 inches and shorter, and on longer Shears there are two or three separate treadles.

Brake is used in connection with the driving mechanism, to insure stoppage at the highest point.

Capacities given apply to iron or soft steel. In cutting steel, running higher in carbon, the hardness of the stock must be taken into consideration and the extreme thickness reduced accordingly. Do not use Shears for stock exceeding the extreme thickness given by us, even if the pieces to be cut are narrow.

In making selection it is well to figure on ample leeway, as the capacity of Squaring Shears is influenced by the sharpness of the knives, and by the care with which adjustments are kept up by the operator.

NIAGARA SHEAR CLUTCH

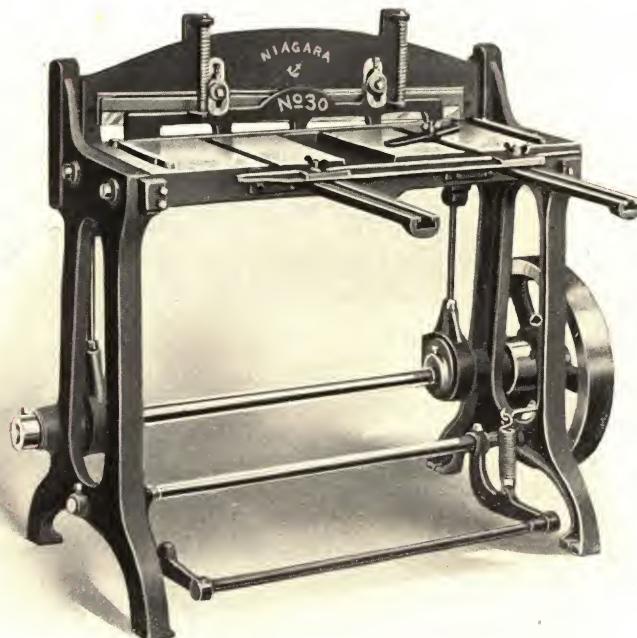
The motion of our Power Squaring Shears is controlled by a positive clutch of simple construction and great efficiency. The working parts are made of hardened tool steel and the wearing and pressure surfaces are larger than on any other clutch, insuring durability and least possible likelihood of getting out of order. In place of the ordinary clutch pin, a latch of segment shape with very large striking surface is used. The clutch can be taken apart and examined by sliding the wheel towards the end of the shaft.

Depressing the foot treadle slightly is sufficient to trip the clutch. Unless the treadle is kept depressed, the motion will stop automatically when the cutter bar is again at the highest point, while the flywheel keeps on revolving. There are two steel-lined engaging grooves in the hub of the wheel, so that not more than one-half of a revolution is lost in starting, after the treadle is depressed.

MICROMETER BACK GAUGE

The back gauge of our Power Squaring Shears is mounted on micrometer gauge holders, which give the advantage that fine adjustment can be readily made. The gauge can be quickly moved approximately to the required position, and final adjustment is then made by means of the micrometer device.

On the heavier types of shears, the rods that carry the holders are mounted on cast iron brackets, as shown in cut, and on the lighter types round rods only are used.

NIAGARA POWER SQUARING SHEARS**No. 10 SERIES****No. 30****For No. 22 Iron and Lighter**

Intended for the same class of work as Tinners' Foot Shears, for which they will answer as well as more expensive machines.

General description, page 420, explains the principal features.

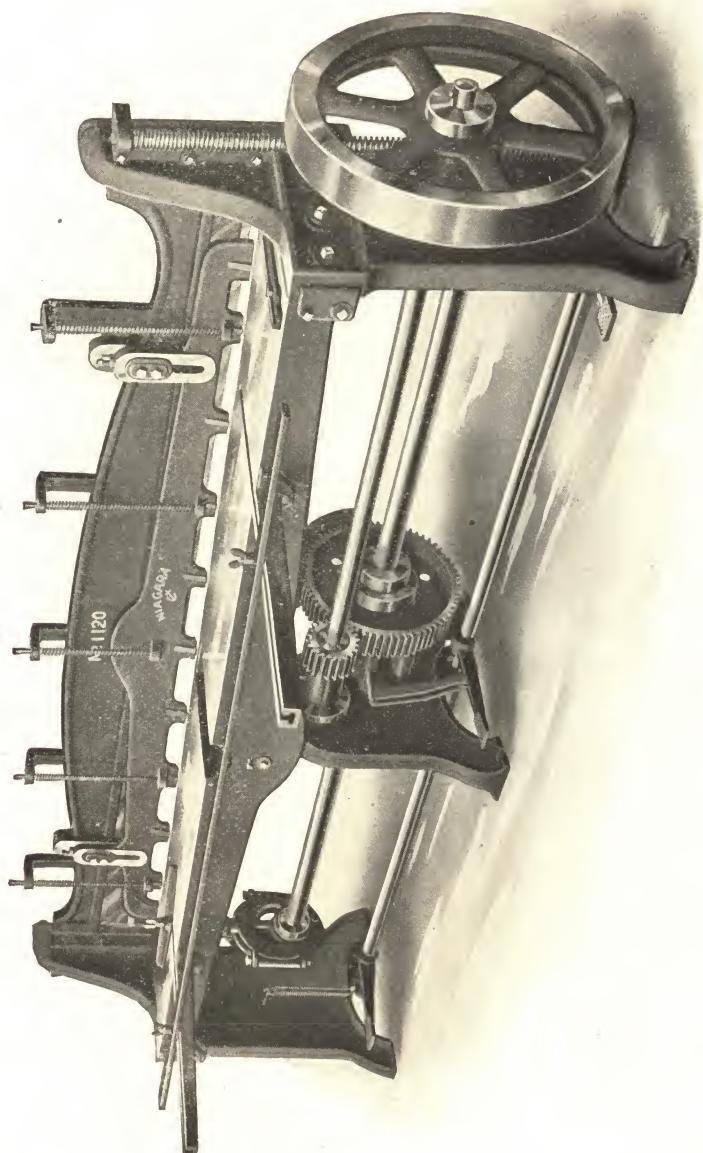
Eccentrics on the driving shaft convey motion to the cutter bar.

Spring Hold-down is actuated by the cutter bar.

Micrometer Back Gauge (see page 421), is included in the set of gauges.

Number	30	42
Will cut and square, inches.....	30	42
Floor space over all, F to B—R to L, inches.....	60 x 51	60 x 63
Weight, lbs.	600	900
Price	\$.....	\$.....

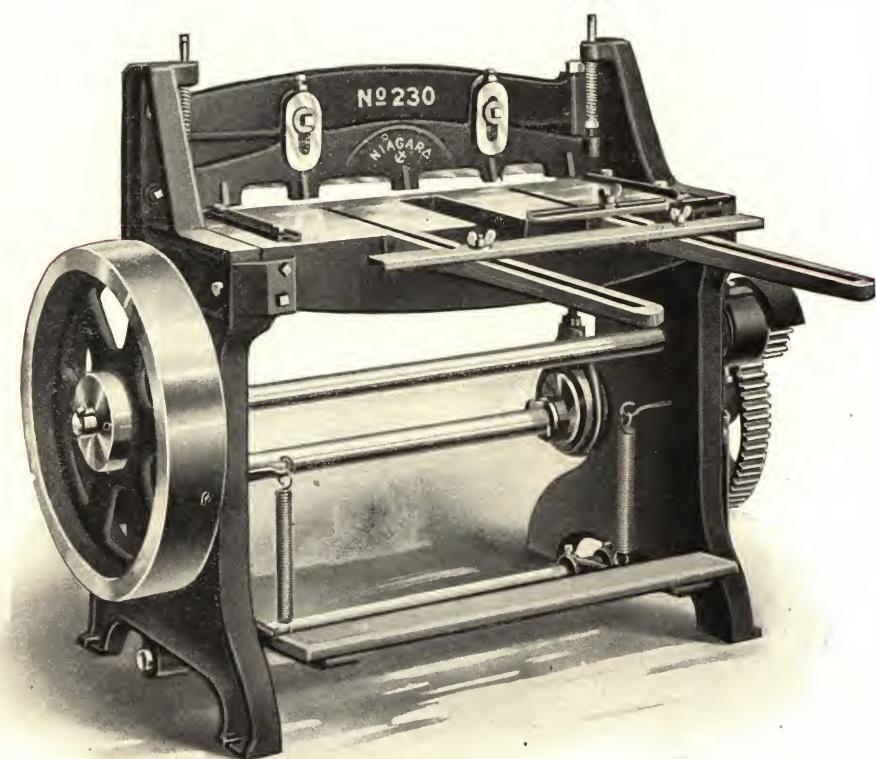
NIAGARA POWER SQUARING SHEARS
No. 100 SERIES



No. 1120

NIAGARA POWER SQUARING SHEARS

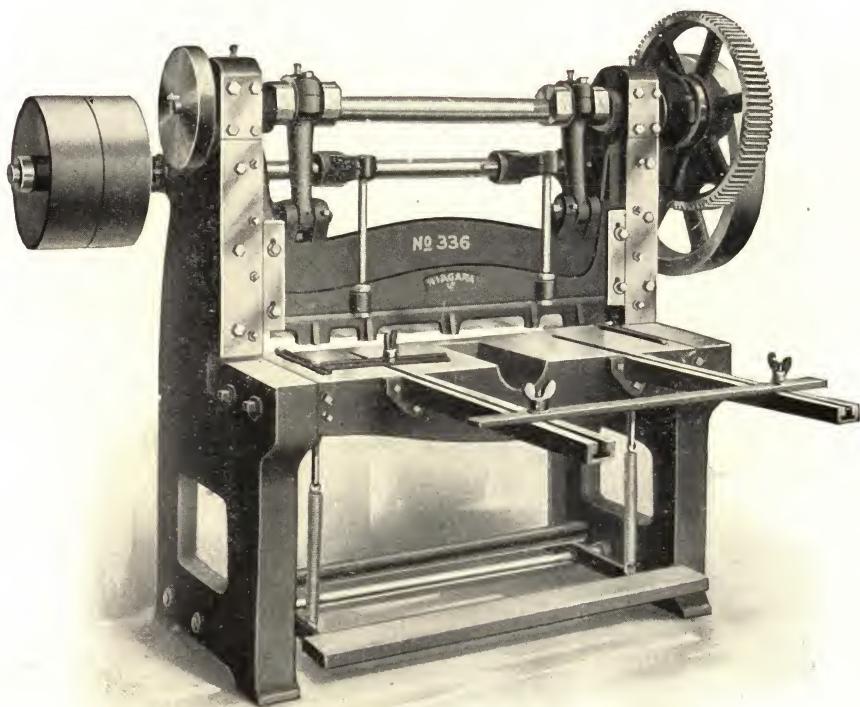
No. 200 SERIES



No. 230

NIAGARA POWER SQUARING SHEARS

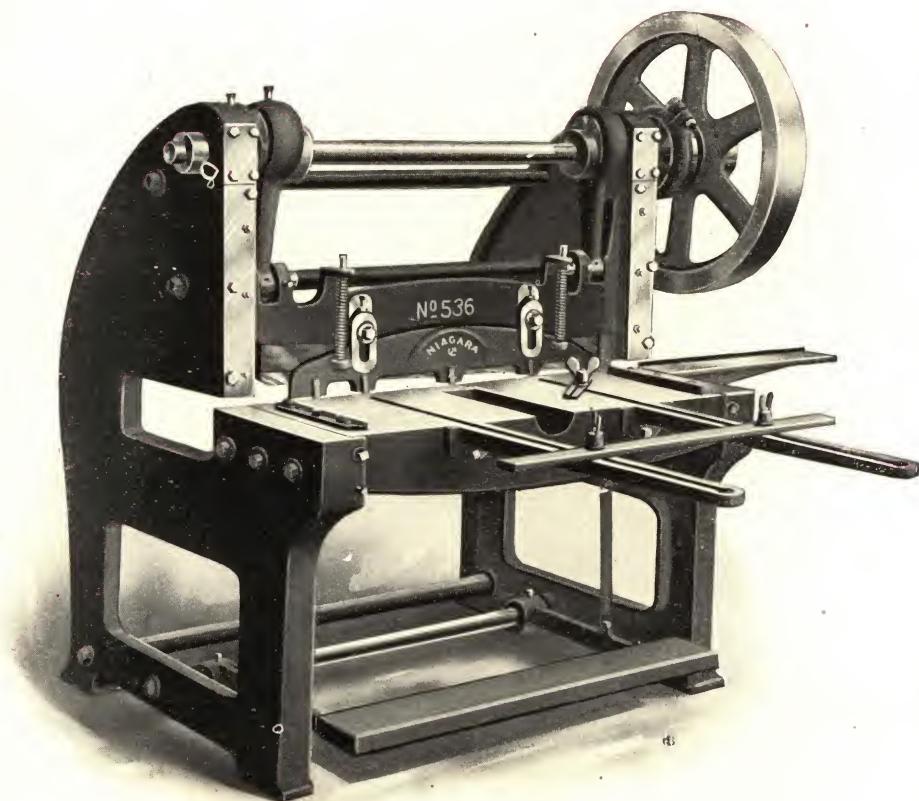
No. 300 SERIES



No. 336

NIAGARA POWER GAP SHEARS

No. 500 SERIES



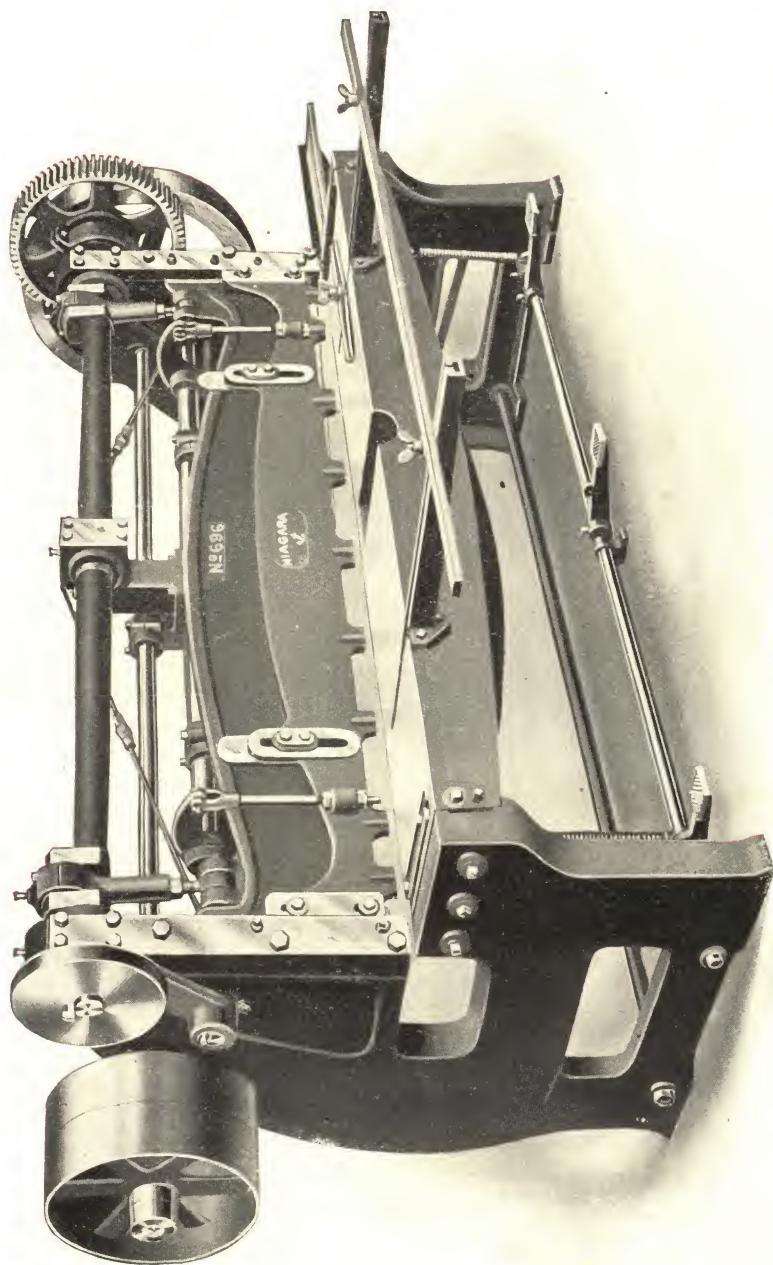
No. 536

NIAGARA POWER GAP SHEARS

Housings have open throat 15 inches deep (unless otherwise ordered), giving the advantage that, in addition to cutting and squaring sheets equal to the length of the knives, sheets of any length can be cut apart, as far from the edge as the gap allows. Slitting gauge at the right hand housing is used when slitting sheets longer than the knives. After the first stroke, the edge obtained at the previous stroke is used to gauge by, to insure alignment of the successive cuts.

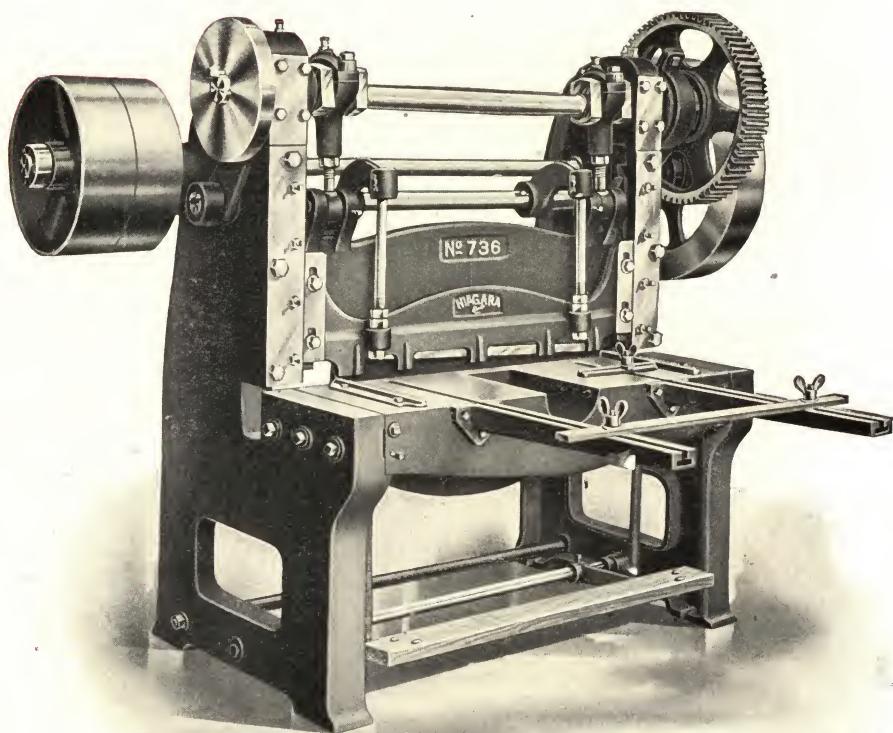
NIAGARA POWER GAP SHEARS

No. 600 SERIES



No. 696

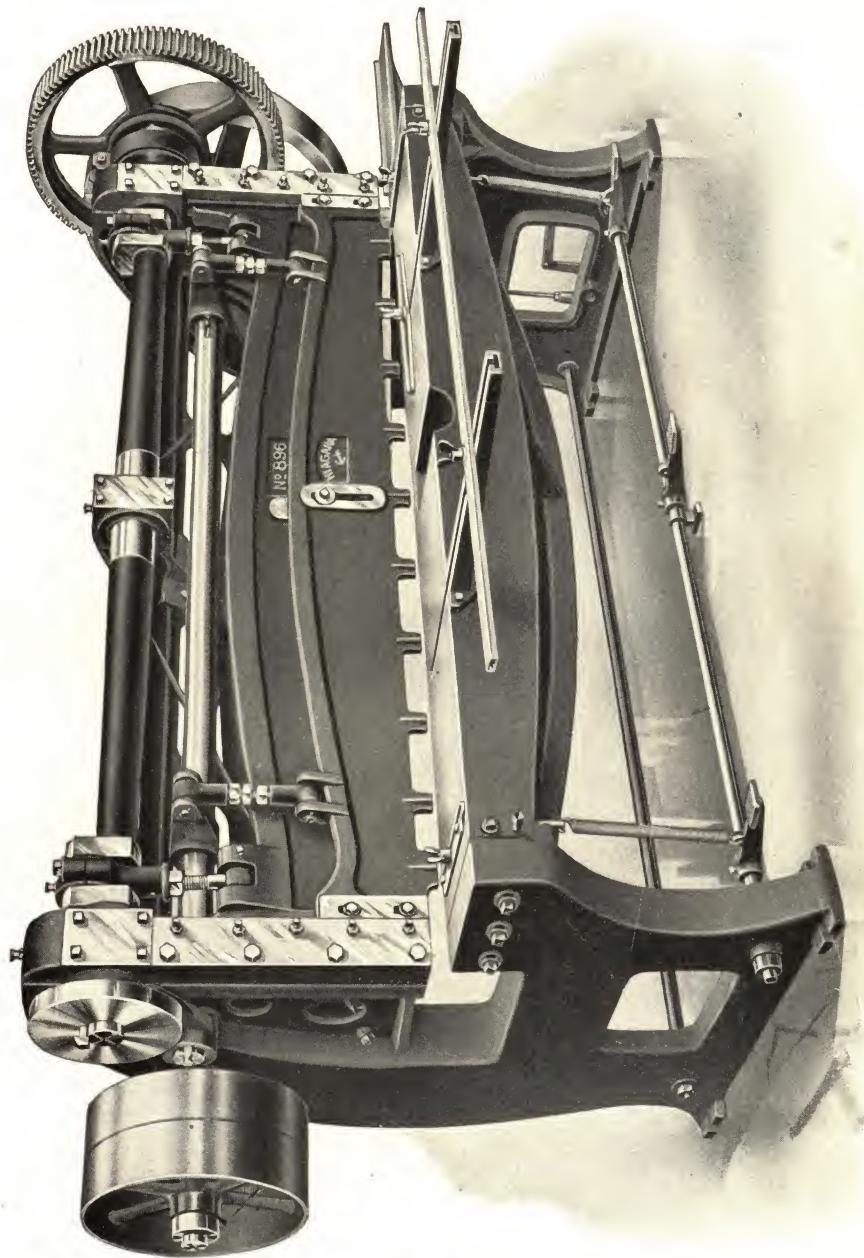
NIAGARA POWER SQUARING SHEARS
No. 700 SERIES



No. 736

NIAGARA POWER GAP SHEARS

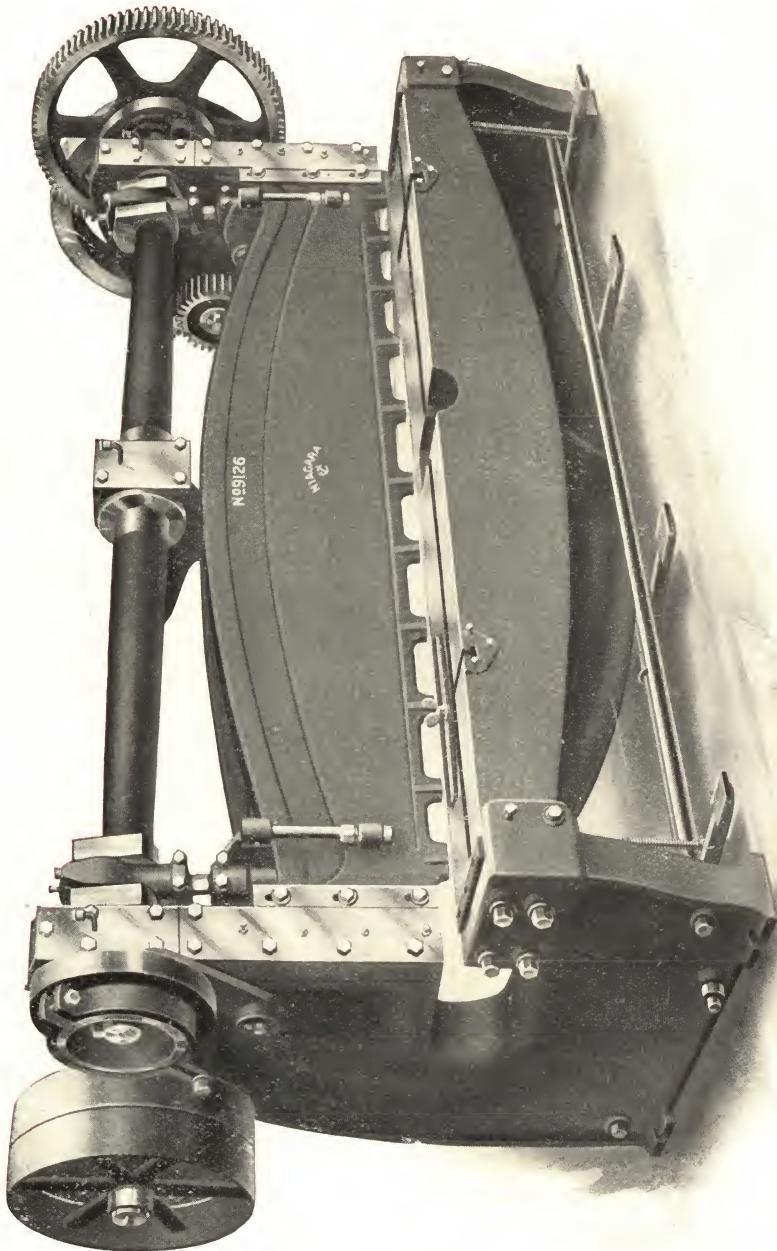
No. 800 SERIES



No. 896

NIAGARA POWER GAP SHEARS

No. 900 SERIES



No. 9126

NIAGARA POWER SQUARING SHEARS

Cutting length	30	36	42	52	62	72	96	120	132	144
For No. 22 and lighter. Solid housings, spring holddown	Number Weight, lbs. Price	30 600 \$.....	36 \$.....	42 900 \$.....	52 \$.....	62 \$.....	72 \$.....	96 \$.....	120 \$.....	132 \$.....
For No. 18 and lighter. Solid housings, spring holddown	Number Weight, lbs. Price	130 850 \$.....	136 1100 \$.....	142 1250 \$.....	152 1500 \$.....	162 1800 \$.....	172 2000 \$.....	196 3700 \$.....	1120 4300 \$.....	1132 4700 \$.....
For No. 14 and lighter. Solid housings, spring holddown, back geared	Number Weight, lbs. Price	230 1300 \$.....	236 1500 \$.....	242 1800 \$.....	252 2100 \$.....	262 2600 \$.....	272 2900 \$.....	296 5200 \$.....	2120 6500 \$.....	2132 7500 \$.....
For $\frac{1}{8}$ -inch and lighter. 1-inch gap, overhead drive, back geared, cam hold-down, T. & L. pulley	Number Weight, lbs. Price	330 3200 \$.....	336 3400 \$.....	342 3600 \$.....	352 3800 \$.....	362 4400 \$.....	372 6000 \$.....	396 7600 \$.....	3120 8800 \$.....	3132 9800 \$.....
For $\frac{3}{8}$ -inch and lighter. 1-inch gap, overhead drive, back geared cam hold-down, T. & L. pulley	Number Weight, lbs. Price	736 \$.....	736 4700 \$.....	748 \$.....	762 48-in. \$.....	772 5100 \$.....	772 6000 \$.....	796 6800 \$.....	7120 9500 \$.....	7132 12000 \$.....
For No. 16 and lighter. 15-inch gap, overhead drive, not geared, spring holddown	Number Weight, lbs. Price	530 1800 \$.....	536 2000 \$.....	542 2200 \$.....	552 2500 \$.....	562 2900 \$.....	562 \$.....	562 \$.....	562 \$.....	562 \$.....
For $\frac{3}{8}$ -inch and lighter. 15-inch gap, overhead drive, back geared, cam hold-down, T. & L. pulley	Number Weight, lbs. Price	630 3900 \$.....	636 4100 \$.....	642 4350 \$.....	652 4600 \$.....	662 5200 \$.....	672 7000 \$.....	696 8500 \$.....	6120 9800 \$.....	6132 10800 \$.....
For $\frac{1}{4}$ -inch and lighter. 15-inch gap, overhead drive, back geared, cam hold-down, T. & L. pulley	Number Weight, lbs. Price	..... 836 \$.....	..... 836 \$.....	..... 836 \$.....	848 48-in. \$.....	862 6000 \$.....	872 7000 \$.....	896 7800 \$.....	8120 11000 \$.....	8132 13500 \$.....
For No. 542, 15-inch gap, cam holdown T. & L. pulley	Number Weight, lbs. Price	..... 942 \$.....	..... 942 \$.....	..... 942 \$.....	962 \$.....	996 13500 \$.....	996 18000 \$.....	9126 18000 \$.....	9126 22000 \$.....	9126 \$.....

NIAGARA CIRCLE AND SLITTING SHEARS

For cutting sheet metal into circular shape, and strips.

Cutting head for slitting sheets can be furnished separately.

Cutters are made of a special quality of high grade tool steel, properly hardened and ground. Adjustment is provided to take up wear on the cutters and for the thickness of material.

Slitting gauge is fitted to the cutting head, readily adjustable for strips of various widths.

Circle arm has a throat of sufficient depth to permit of cutting the largest circles for which a machine is recommended from square blanks. The proper position of the blank is determined by a swinging gauge and the cutters.

Nos. 02 to 06 for bench use, unless ordered on iron supports at extra charge With T. & L. Pulleys and crank handle.

Nos. 02 to 04 are direct acting; Nos. 05 and 06 back geared.

Nos. 08 and 195, back geared and mounted on iron supports. Circle arm has a deep throat and is mounted on a square bar. Provided with T. & L. pulleys and crank handle.

Nos. 205 to 208 back geared and mounted on iron supports. Provided with T. & L. pulleys and crank handle. Circle arm is carried on a cast iron bed. No. 208 with flanging attachment is shown on page 439.

Nos. 407 to 410 back geared, and with T. & L. pulleys. Circle arm mounted on cast iron bed, and with hand wheel for raising and lowering the upper clamping disc.

Traveling carriage and ways can be applied to our Slitting and Circle shears, particularly those of the heavier types, to facilitate trimming sheets and cutting them into straight strips.

NIAGARA RING AND CIRCLE SHEARS

Suitable for cutting holes or internal circles and irregular curves owing to the inclined position of the lower shaft and cutter. Also adapted to cutting outside circles and slitting, the same as Circle Shears with parallel shafts.

Nos. 11A and 13A. For bench use, unless iron supports are ordered, at extra charge. T. pulley and jaw clutch actuated by hand lever are provided to permit of stopping the motion quickly at any point.

Nos. 15A to 19. Provided with T. & L. pulleys. Can be furnished with T. pulley and jaw clutch, at extra charge, to permit of stopping the motion quickly at any point.

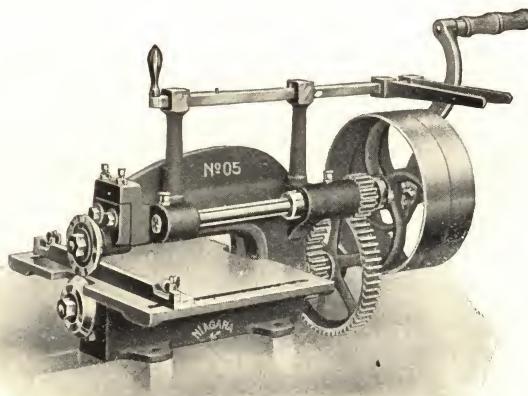
Circle arm is carried on a square bar, except No. 17 which has a cast iron bed.

Nos. 307 to 310. Provided with T. pulley and jaw clutch. Circle arm mounted on cast iron bed.

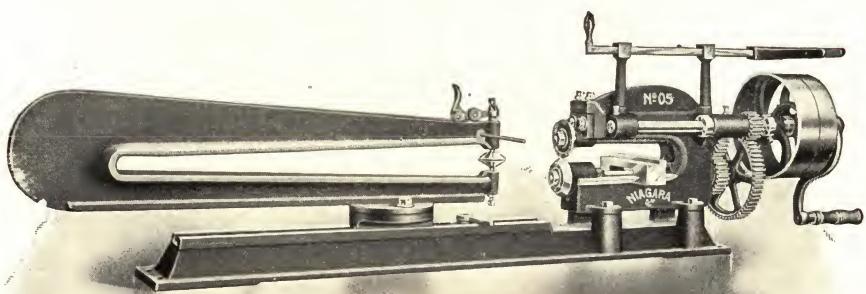
Segment attachment. Ring Shears can be provided with attachment for cutting segments, used in place of the circle arm. The material is clamped on a swinging bar, pivoted the proper distance from the cutters, according to the radius of the curve, and the inner and outer curves of the segments are cut successively.

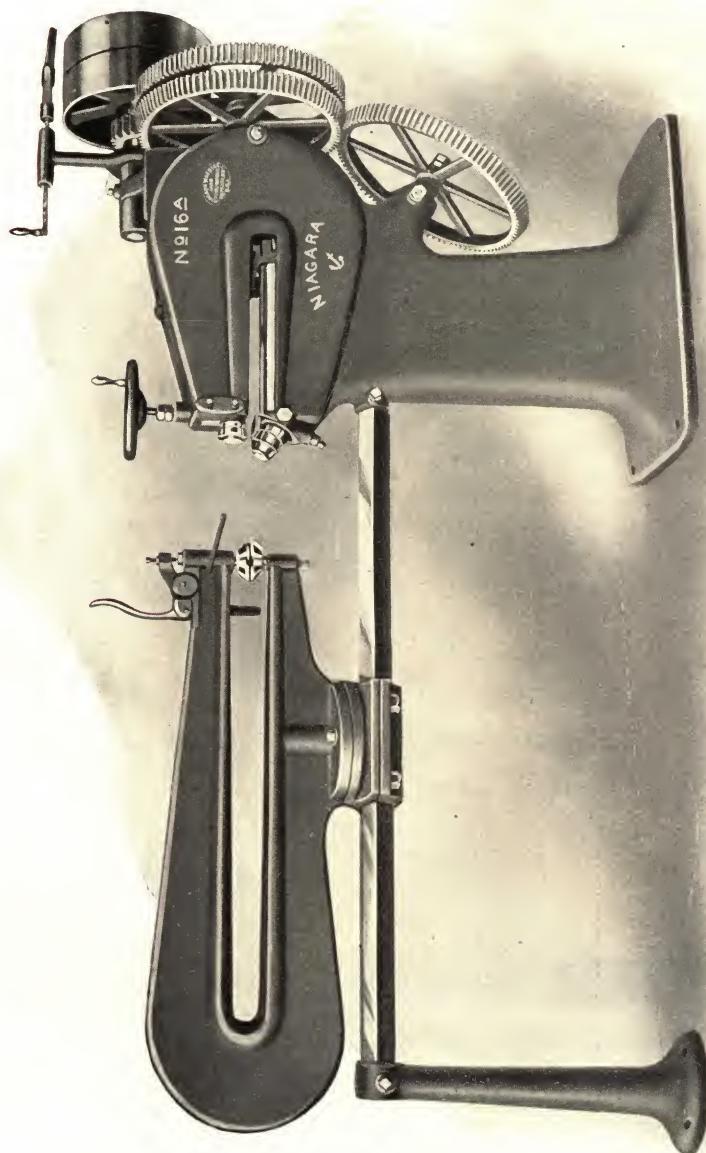
Inquiries should state the width of the segments, width of sheets, largest and smallest radius and thickness of material.

No. 05. NIAGARA SLITTING SHEARS

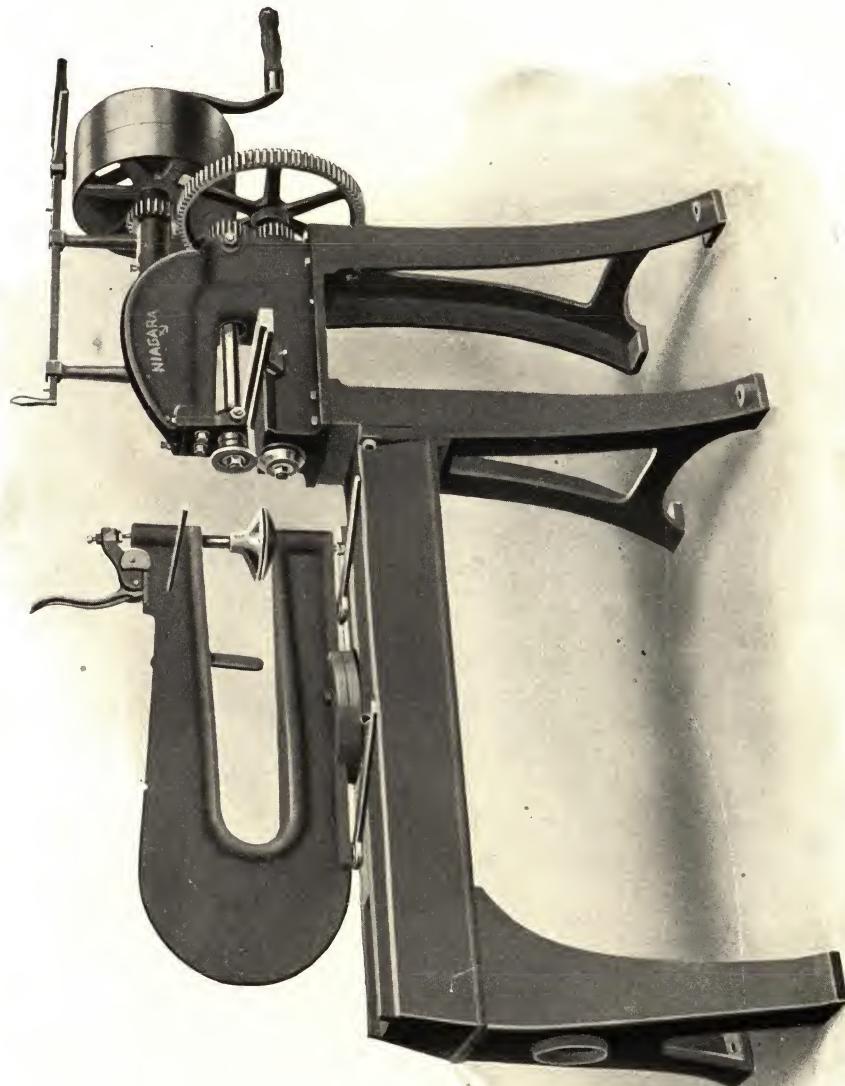


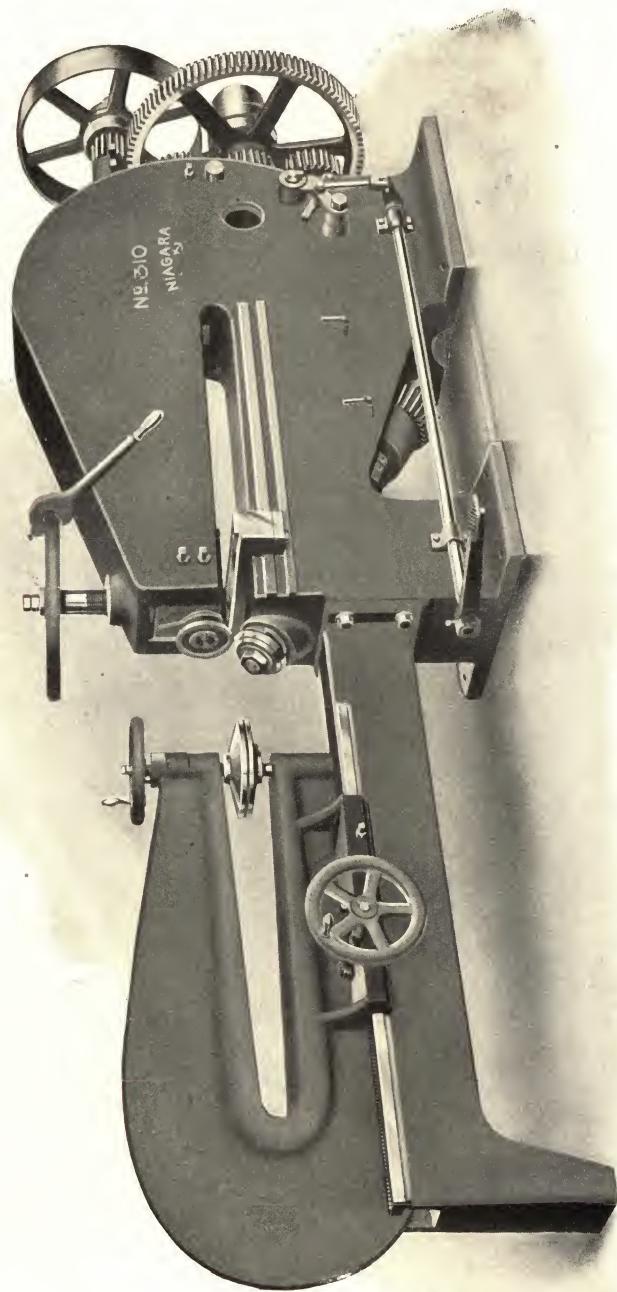
No. 05. NIAGARA CIRCLE AND SLITTING SHEARS



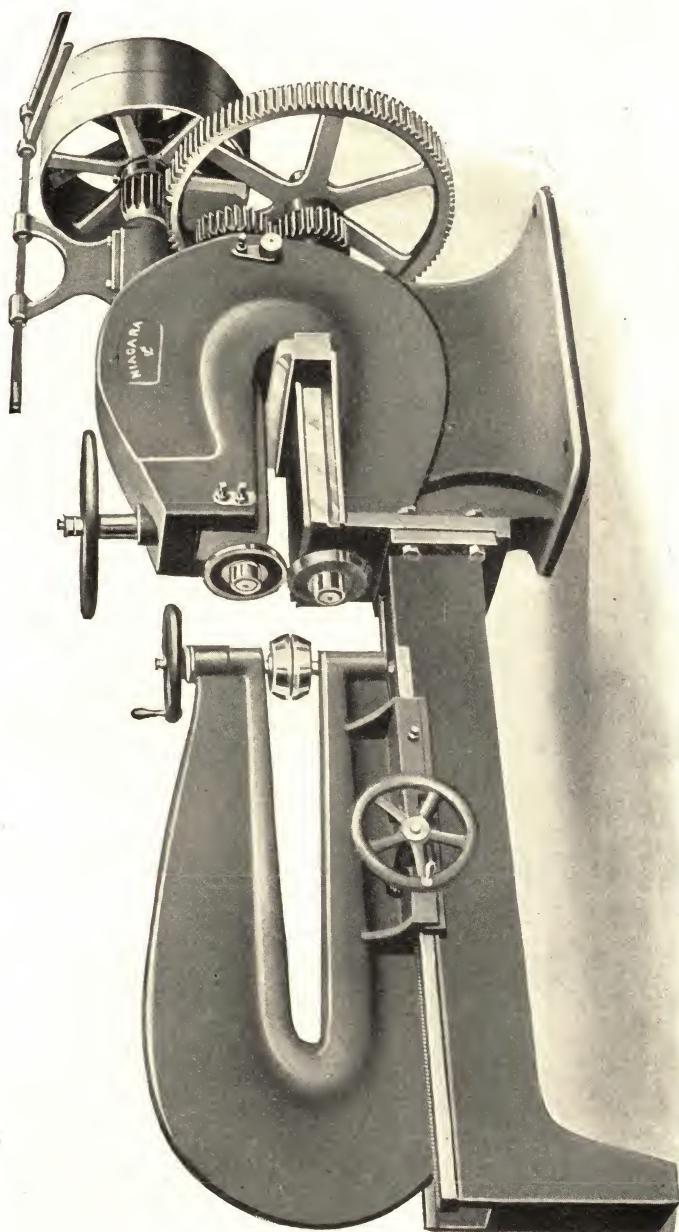
No. 16A. NIAGARA RING AND CIRCLE SHEARS

No. 205. NIAGARA CIRCLE AND SLITTING SHEARS



No. 310. NIAGARA RING AND CIRCLE SHEARS

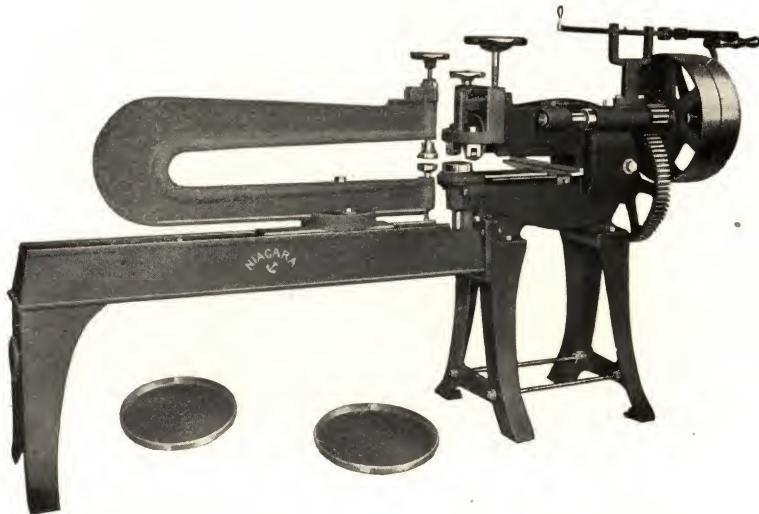
No. 407. NIAGARA CIRCLE AND SLITTING SHEARS



NIAGARA CIRCLE AND SLITTING SHEARS

NIAGARA RING AND CIRCLE SHEARS

No. 208. POWER CIRCLE SHEARS WITH FLANGING ATTACHMENT



This machine is intended for cutting round disks of sheet metal and flanging them afterwards. The illustration shows the machine arranged for the flanging operation. For cutting disks or slitting, the flanging attachment is removed and rotary cutters substituted.

The obtainable height of the flanges depends upon the thickness of the material. On No. 10 to 16 gauge soft sheet steel, flanges from $\frac{5}{8}$ in. to 1 in. high can be turned. On No. 18 to 20 gauge the flanges can be $\frac{3}{8}$ in. to $\frac{5}{8}$ in. high, and on No. 22 to No. 24 gauge, the height is limited to $\frac{1}{2}$ in.

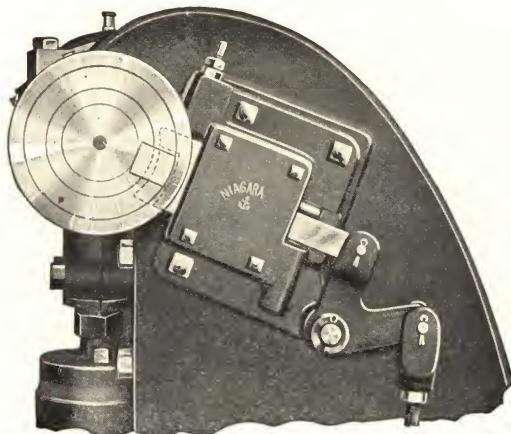
In case it is desired to turn narrower flanges, extra disks are needed.

Will cut in thickness up to.....	.....No. 8
Depth of cutting head to frame.....	.....16 $\frac{1}{2}$ inches
Depth of cutting head to gauge.....	.....16 inches
Throat of circle arm.....	.....38 inches
Will circle from square blanks.....	.....8 inches to 53 inches
Will flange up to.....	.....No. 10
Weight about .....	.....2020 lbs.
Price of Circle and Slitting Shear.....\$.....
Price of Circle Shears with flanging attachment.....\$.....

Circle Shears for heavier or lighter work can be furnished with similar attachments for flanging.

POWER PRESSES

NIAGARA PRESS CLUTCH



The Niagara power presses are provided with a positive clutch of simple construction, durable and reliable. The working parts are made of high grade steel and hardened.

The fly wheel revolves continuously and loosely on the shaft, until by putting pressure on the foot treadle, the clutch is engaged. A clutch pin is forced into a steel-lined recess of the fly wheel, and there are three engaging points so that motion is imparted to the slide of the press almost instantly. To stop the motion of the shaft at the highest point after making one stroke, the operator removes his foot from the treadle, thereby withdrawing the clutch pin from the fly wheel. By keeping the treadle down, the press will make continuous strokes. The clutch can be taken apart and examined, by simply sliding the wheel towards the end of the shaft.

Clutch Pin. A square pin of tool steel extending through the shaft collar with a spring located in its end, is forced into the hub of the fly wheel. It locks the wheel to the shaft and prevents any back lash or rebound when operating combination dies.

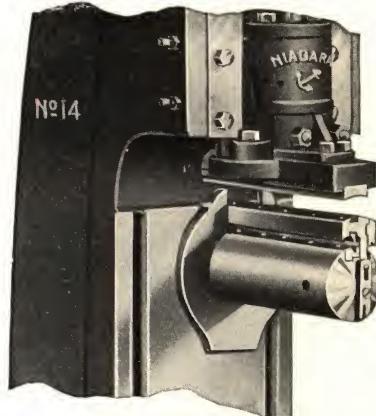
Clutch latch is a straight piece of tool steel located below the shaft, the rear end being cushioned to prevent the clutch pin from knocking against the steel lining of the fly wheel when the clutch is released.

Locking Device. A device is provided by the means of which the operator can lock the clutch pin while it is withdrawn, to allow of setting dies and making adjustments without removing the belt from the fly wheel. The wheel can be turned backwards to release a punch that may be stuck in the die.

Brake which can be easily adjusted, insures stoppage at the highest point when the clutch is released.

POSITIVE STOP

A device can be applied to our press clutch that will cause the slide to stop at the highest point after every depression of the foot treadle, so that the operator is compelled to depress the foot treadle again before the slide will make another stroke. The device can be detached to permit of operating the press in the usual way.



Duplex Side Seamer

SIDE SEAMING ATTACHMENTS

Intended for making lock seams. The folding and closing operations are performed successively, at the same handling. These attachments can be applied to all Presses suitable for horn dies.

The construction of our Side Seamers is such that it is not necessary to use a Press with limited stroke.

Duplex Side Seamer. The folding operation is done under the lower part of an auxiliary slide attached to the horn, and the closing operation on the upper surface of this slide. This construction can be used for longer work than our Tandem Side Seamers. The smallest diameter of the work is limited by the height of the horn and the auxiliary slide, when apart.

Number	13	14	15
Smallest diameter of work, inches.....	3½	4½	6
Extreme length of work, inches.....	10	16	20
Extreme thickness of material, Nos.....	28	26	24
Price with hardened working parts.....	\$.....	\$.....	\$.....

Duplex Side Seaming Attachments are made with slight adjustment. The seam can be made up to $\frac{1}{8}$ inch wider than the size for which the attachment is ordered. On No. 26 gauge and lighter the seam can be made not less than $\frac{1}{4}$ inch wide. On No. 24 gauge and lighter the seam can be made not less than $\frac{7}{16}$ inch wide.

Each Duplex Side Seaming Attachment is fitted for a given thickness of material and width of seam. The seam can be either towards the inside or outside, as may be ordered.

Tandem Side Seamer. The folding and closing parts are on the same level on the horn. This construction is suitable for work of smaller diameter, but not as long, as can be done on the Duplex Seamer.



Tandem Side Seamer

Number	1	2	3	4	5
Smallest diameter of work, inches.....	1¼	1½	2½	3	3½
Extreme length of work, inches.....	3	4	6	8	10
Usually fitted for Press, Nos.....	12	13	13	14	15
Price	\$.....	\$.....	\$.....	\$.....	\$.....
Can be fitted for Presses, Nos.....	13	14	14 or 15	15	
Extra charge for fitting to larger Presses than usual	\$.....	\$.....	\$.....	\$.....	\$.....

Each attachment is fitted for a certain thickness of material and a given width of seam, either inside or outside, as may be ordered. The attachment may be used for material slightly thinner than it is fitted for.

No. 1 can be fitted for material not heavier than No. 29 gauge; Nos. 2 to 5, up to No. 26 gauge.

NIAGARA INCLINABLE POWER PRESSES

SERIES NO. 1

In workmanship, convenience and durability these Presses are unsurpassed, and the range of work for which they are suitable is unlimited, including blank cutting, punching, forming and combination dies used in the manufacture of articles of sheet metal, etc.

The outlines are pleasing, the proportions right, and the material properly distributed. The wearing surfaces are large, and all parts well fitted.

Clutch. Our excellent Press Clutch described on page 440 controls the motion.

Fly wheel on plain Presses has a long bronze-bushed bearing, and means are provided for continuous lubrication. The lubricator is accessible while the fly wheel is in motion.

Shaft is heavy, forged of steel, with large crank pin. The clutch collar is forged solid on the shaft.

Connection, type No. 2, has a heavy connection screw of tool steel, ball shaped at one end and resting in a recess of the slide. Provision is made to take up wear on the ball. The connection screw is locked to the pitman in the desired position by means of two clamping bolts. The ball and socket construction prevents the adjustment from becoming loose while the Press is running.

Slide has a loose cap at the lower end to grip the punch shank in a square recess, or bushings can be inserted when the shanks of punches vary in diameter. The slide is large and has wide bearings. Long "V" gibbs at each side of the slide are placed out of center towards the back, to give free access to the light upon the dies and the work. Lugs are cast on the slide to facilitate fastening wide punches. If desired, slide can be made with dovetail, instead of being arranged for punches with round stems.

Bolster-plate has slots to receive the heads of the bolts that fasten the bolster to the bed, thereby leaving the upper surface of the bolster-plate without obstruction.

Treadle lock is furnished (except on No. 2) by means of which the operator can lock the treadle down for continuous strokes.

Inclining device on No. 3 to 7 consists of a vertical screw and hand wheel. The adjusting screw will hold the frame positively in all positions. The upright position is required for cutting, edging, punching and perforating, where the material drops through the bed of the Press. The inclined position is preferable when combination dies are used that cut and form at the same operation. The finished work will slide through the opening in the back of the Press by gravity. The height of the working surface of the bed is nearly the same in all positions.

Positive knockout is applied to the slide of our Inclinable Presses, without extra cost, to discharge the work from the upper die positively at each stroke of the Press.

No. 101. NIAGARA POWER PRESS



Intended for light blanking, punching and forming operations, for jewelers' use, etc. Its efficiency excels by far that of a Foot Press. This Press has interchangeable parts, carefully fitted. The crank shaft is a steel forging with solid eccentric to actuate the slide, which has long "V" bearings.

Fine and accurate adjustment of the slide can be made by means of R. and L. screw. The pressure of the connection, type No. 1, is taken up by a hardened steel cup in the slide.

Clutch of the type described on page 440 controls the motion.

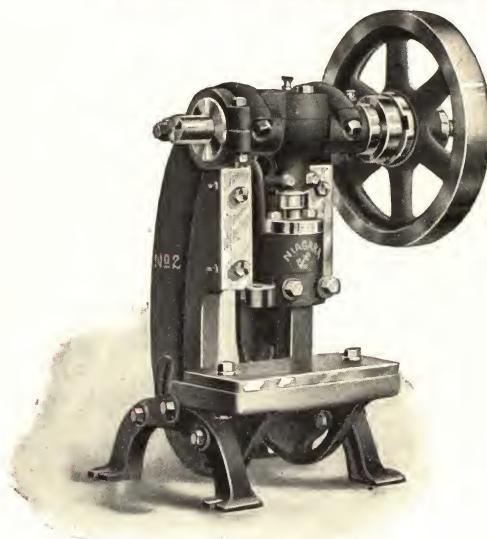
Brake consists of a round piece of fibre bearing against the circumference of the clutch collar.

Die Holder, accommodating dies up to $2\frac{1}{4}$ inches wide and $3\frac{1}{4}$ inches long, is furnished. The holder carries a removable die shoe suitable for smaller dies. The die holder is fastened to the bed of the Press by means of two clamps secured by bolts, that can be adjusted laterally in "T" slots of the bed. There is an iron drawer under the table to receive punchings.

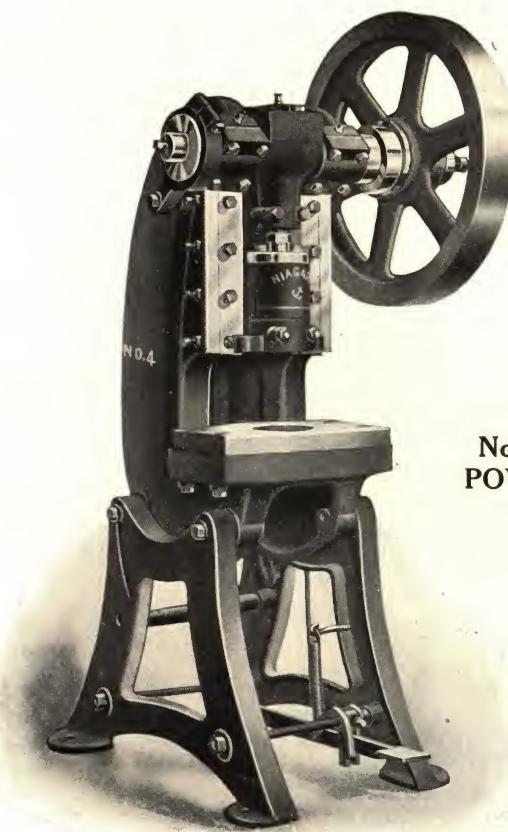
Number	101
Opening of bed, round.....	inches 3
Distance from center of slide to back.....	inches $3\frac{3}{4}$
Width of opening in back of press.....	inches $5\frac{1}{4}$
From bed to slide when up, standard stroke.....	inches 6
Stroke of slide.....	inches 1
Adjustment of slide	inches $1\frac{1}{4}$
Usual hole in slide, round.....	inches 1
Area top of table.....	inches 6×12
Diameter of shaft, in bearings.....	inches $1\frac{3}{8}$
Floor space, F to B—R to L.....	inches 23×24
Height to center of shaft.....	inches 49
Size of fly wheel.....	inches $14 \times 2\frac{1}{4}$
Weight of fly wheel.....	lbs. 35
Speed of fly wheel.....	rev. 125
Weight	lbs. 380
Price	\$.....

Die holder is included in price.

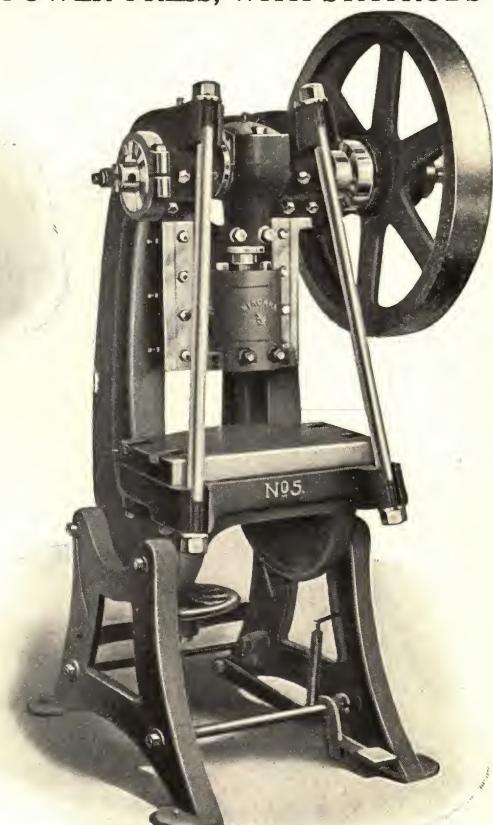
Automatic Roll and other Feed can be applied for light automatic work.

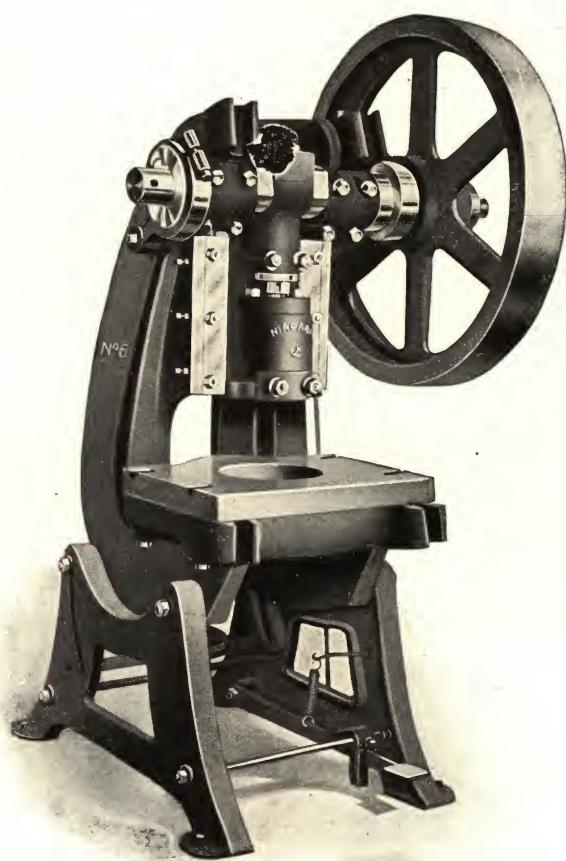
No. 2. NIAGARA INCLINABLE POWER PRESS**No. 3. NIAGARA INCLINABLE
POWER PRESS**

No. 4. NIAGARA INCLINABLE POWER PRESS



No. 5. NIAGARA INCLINABLE
POWER PRESS, WITH STAYRODS



No. 6. NIAGARA INCLINABLE POWER PRESS

NIAGARA INCLINABLE POWER PRESSES

SERIES NO. 1

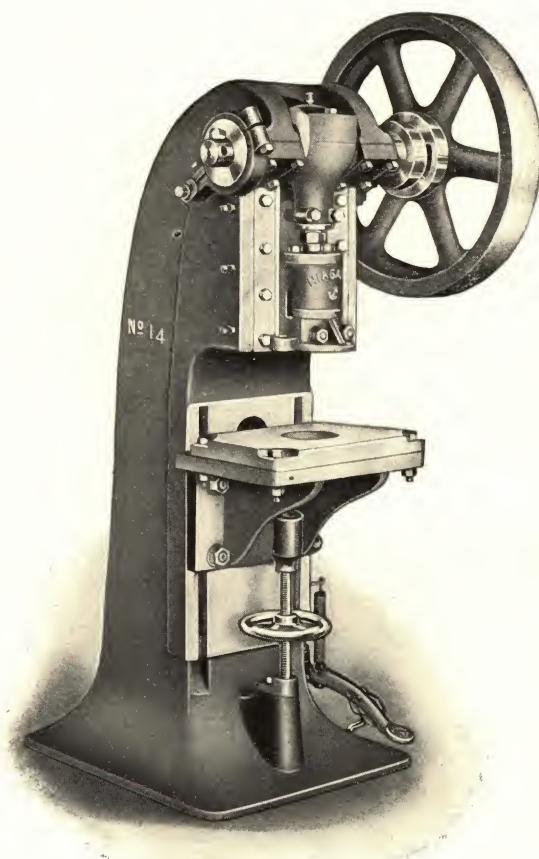
Plain Press

Nos.	for bench	2	3	4	5	6	7
Opening in bed, rectangular part.....	4 x 6	4½ x 8	6 x 10	8 x 12	14 x 14	24 x 25	
Opening in bed, circular part.....	5	6	8	10	9	15	
Distance from center of slide to back.....	4	4½	5	6	12	14	
Width of opening in back of press.....	6½	7	8½	8	9	10	
From bed to slide, when up, standard stroke.....	6	7	2	2½	3	3	
Stroke of slide, standard.....	1½	1½	4	4½	5	6	
Stroke of slide, maximum.....	2	3½	2½	3	3	3	
Adjustment of slide.....	2	2	2½	2	2	2	
Usual hole in slide, square.....	1½	1½	2	2	2	2	
Area top of bolster-plate.....	7½ x 15	9 x 15½	10¾ x 19	14¾ x 24	19 x 27½	30 x 29	
Thickness of bolster-plate.....	¾	1¼	1¾	2½	2½	3	
Diameter of shaft, in bearings.....	2	2½	2½	3	3½	4½	
Floor space, F to B—R to L.....	20 x 26	34 x 30	38 x 34	44 x 40	49 x 45	63 x 50	
Height to center of shaft.....	26¾	54	58	61	63	72	
Size of fly wheel.....	18 x 2½	22 x 3	28 x 4	34 x 5	40 x 6	45 x 7	
Weight of fly wheel.....	100	175	280	500	750	1100	
Speed of fly wheel.....	125	120	110	100	90	85	
Weight	500	1000	1400	2600	4000	7000	
Price	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....	

Geared Press

Size of fly wheel.....	.....inches	18 x 2½	20 x 3	25 x 4	30 x 5
Weight of fly wheel.....	.....lbs.	130	175	275	500
Speed of fly wheel.....	.....rev.	480	420	360	300
Size of pulley.....	.....inches	18 x 2½	20 x 3	25 x 4	30 x 5
Ratio of gearing.....	.....	6:1	6:1	6:1	6:1
Strokes per minute.....	.....	80	70	60	50
Weight .....	.....lbs.	1550	2750	4200	7300
Price	\$.....	\$.....	\$.....	\$.....	\$.....

Bolster-plate with bolts and wrenches, also knockout in slide, are included in the price.
Stroke varying from standard and other modifications are charged for extra.

No. 14. NIAGARA POWER PRESS

With Screw Adjusting Table

Adjustable table allows considerable variation in the height of the die space. The adjusting screw serves also to support the table. The table is fastened to the frame by means of four bolts, and can be removed entirely. If adjustment of the die space is not required, the adjusting screw can be omitted, and the table doweled to the frame in a fixed position.

Wiring frame and sliding bolster can be provided on the adjustable table for operating wiring dies.

Horn hole in the frame permits of inserting horns or anvils for riveting, lock seaming, etc.

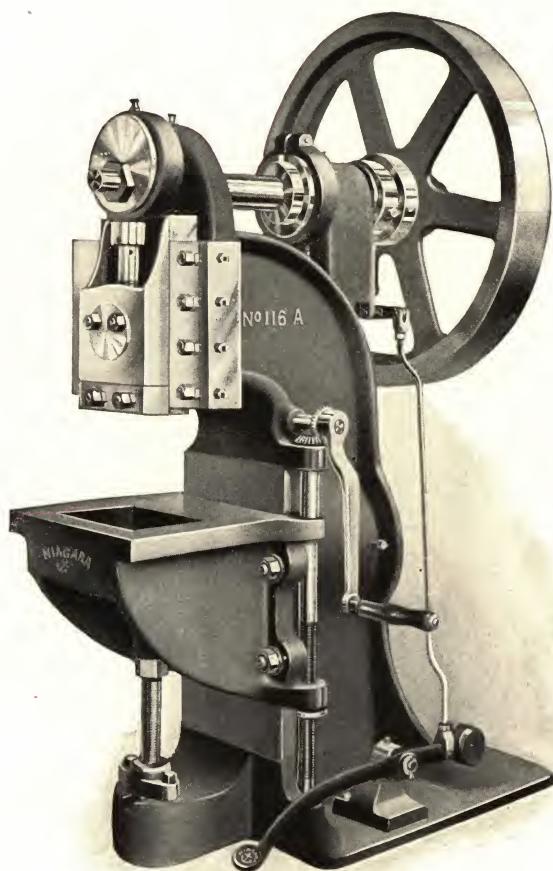
NIAGARA POWER PRESSES

ADJUSTABLE BED. SERIES NO. 10

Plain Press

Nos.	12 for bench	13	14	15
Opening in bed, rectangular part.....	4 x 6	6 x 6	7 x 7	10 x 11
Opening in bed, circular part.....	5	5½	8	10
Distance from center of slide to back.....	4	5 to 16	5½ to 16	6 to 15½
From bed to slide, when up, standard stroke.....	6½	1½	2	2½
Stroke of slide, standard.....	1½	3½	4	4½
Stroke of slide, maximum.....	2	2	2½	3
Adjustment of slide	1½	1½	2	2
Usual hole in slide, square.....	7 x 1	10 x 15	12 x 18½	17½ x 19½
Area top of table	7¾	1½	1¾	2¼
Thickness of bolster-plate.....	2	2½	2½	3
Diameter of shaft, in bearings.....	27 x 27	35 x 33	44 x 35	46 x 40
Floor space, F to B—R to L.....	26½	54	60	63
Height to center of shaft.....	18 x 2½	22 x 3	28 x 4	34 x 5
Size of fly wheel.....	100	175	280	500
Weight of fly wheel.....	rev. lbs.	125 500	120 1200	110 2300
Speed of fly wheel.....	\$	\$	\$	\$
Weight { with fixed table	\$	\$	\$	\$
without table	\$	\$	\$	\$
Price { with screw adjusting table	\$	\$	\$	\$
Wiring frame and sliding bolster, extra.....	\$	\$	\$	\$
Horn and force, extra.....	\$	\$	\$	\$

Bolster-plate is not furnished with these presses, unless ordered.

No. 116A. NIAGARA POWER PRESS

With Screw Adjusting Table Arranged to Swing Sideways

NIAGARA POWER PRESSES**WITH REMOVABLE BED. SERIES NO. 110****Plain Press**

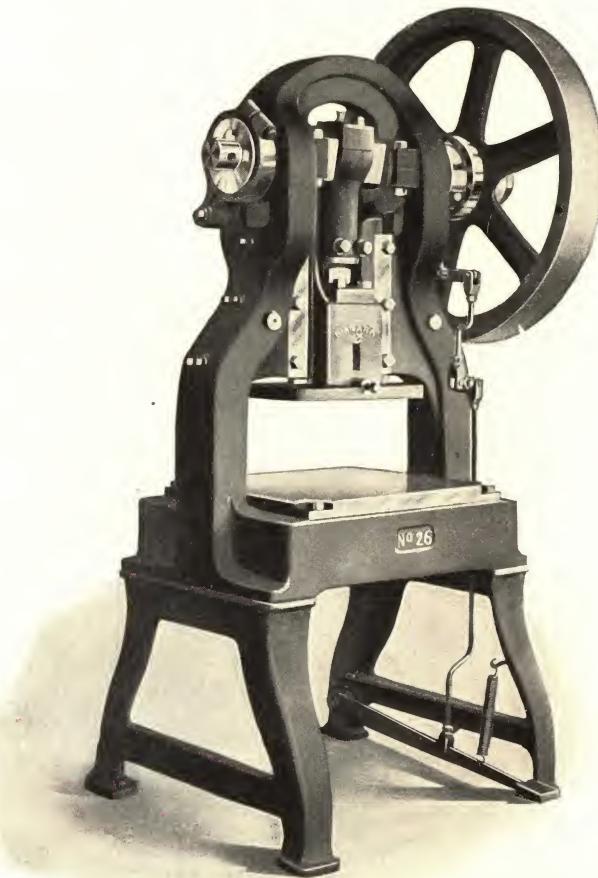
Nos.	114	115	116	116A
Opening in bed	5 x 7 5½	6 x 9 6	8 x 10 6½	10 x 12 12
Distance from center of slide to back	7 to 17	7 to 17	8 to 18 1½	7 to 16 1½
From bed to slide, when up, standard stroke	1½	1½	3½ 3	3½ 3
Stroke of slide, maximum	2	2½	3	3
Thickness of slide	3	3	2	2
Adjustment of slide	2	2	2	2
Usual hole in slide, square	4	5	6	7
Horn hole in frame	10 x 14 1½	12 x 18 2½	12½ x 20 2½	20 x 20 2½
Area top of bolster-plate	32 x 28 2½	40 x 34 3	44 x 40 3½	59 x 40 3½
Thickness of bolster-plate	32 x 28 2½	40 x 34 3	44 x 40 3½	59 x 40 3½
Diameter of shaft, in bearings	inches	inches	inches	inches
Floor space, F to B—R to L	54	58	64	66
Height to center of shaft	inches	inches	inches	inches
Size of fly wheel	28 x 4 280	34 x 5 500	40 x 6 750	40 x 6 750
Weight of fly wheel	lbs. 110	lbs. 100	lbs. 90	lbs. 90
Speed of fly wheel	rev. 1200	rev. 2400	rev. 3500	rev. 4600
Weight { with bolted table	lbs.	lbs.	lbs.	lbs.
Price { without table	\$.....	\$.....	\$.....	\$.....

Geared Press

Size of fly wheel	18 x 2½ 130	20 x 3 175	25 x 4 275	25 x 4 275
Weight of fly wheel	lbs. 480	lbs. 420	lbs. 360	lbs. 360
Speed of fly wheel	rev. 6:1	rev. 6:1	rev. 6:1	rev. 6:1
Size of pulley	inches	inches	inches	inches
Ratio of gearing .....	.....	80	70	60
Strokes per minute .....	.....	2400	3500	4600
Weight { with bolted table	lbs.	lbs.	lbs.	lbs.
Price { without table	\$.....	\$.....	\$.....	\$.....

Bolster-plate with bolts and wrenches are included in the price.

Stroke varying from standard and other modifications are charged for extra.

No. 26. NIAGARA POWER PRESS**PLAIN**

Geared presses can be made with a pulley rim on the large gear, at extra charge, for direct drive when doing lighter work.

Flat bolster is used for blanking, forming, stamping and lettering operations.

Horn and force or side seaming attachments can be furnished for round, square and oval work, etc. The horn is fastened to a horn bolster.

Sunken bolster with wiring frame can be attached for operating wiring dies for pieced tinware, etc.

Wiring Frame. When large and deep work requires to be wired, a wiring frame is fitted to the press, and the dies made to slide in it.

Removable Front. The bed is made with a removable front piece only when so ordered, otherwise solid. The open front is necessary when wiring dies, or horn and force are to be used.

NIAGARA POWER ARCH PRESSES**SERIES NO. 20****Plain Press**

Nos.	25	26	27
Opening in bed inches	16 x 22	16 x 22	16 x 22
Distance between uprights inches	28 $\frac{1}{4}$	30 $\frac{1}{2}$	30 $\frac{1}{2}$
From bed to slide, when up, standard stroke inches	10	12	12
Stroke of slide, standard inches	2 $\frac{1}{2}$	3	3
Stroke of slide, maximum inches	4 $\frac{1}{2}$	5	6
Adjustment of slide inches	3	3	3
Usual hole in slide, square inches	2	2	3
Area top of bolster-plate inches	26 x 28	26 x 29 $\frac{1}{2}$	26 x 30
Thickness of bolster-plate inches	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2
Diameter of shaft, in bearings inches	3	3 $\frac{1}{2}$	4 $\frac{1}{4}$
Floor space, F to B-R to L inches	41 x 46	42 x 51	44 x 56
Height to center of shaft inches	67	72	78
Size of fly wheel inches	34 x 5	40 x 6	45 x 7
Weight of fly wheel lbs.	500	750	1100
Speed of fly wheel rev.	100	90	85
Weight lbs.	3200	4300	6100
Price	\$	\$	\$

Geared Press

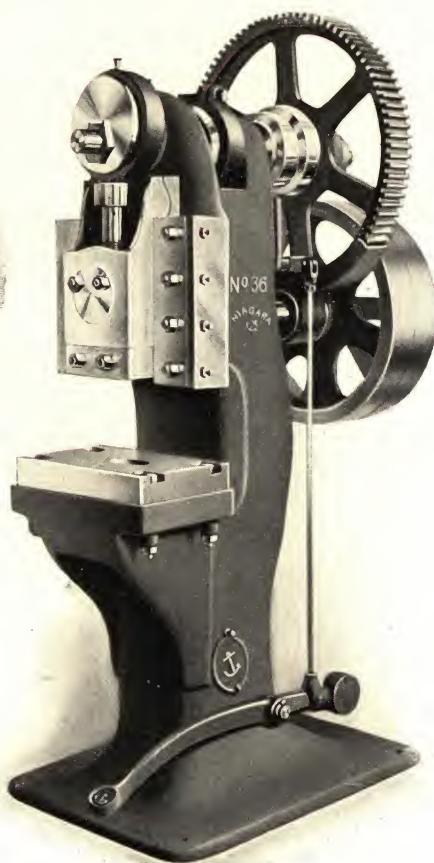
Size of fly wheel inches	28 x 4	30 x 5	40 x 6
Weight of fly wheel lbs.	280	500	750
Speed of pulleys rev.	270	270	250
Size of pulleys inches	20 x 3 $\frac{1}{2}$	24 x 4	26 x 5
Ratio of gearing	6:1	6:1	6:1
Floor space, F to B-R to L inches	44 x 64	45 x 69	54 x 75
Weight lbs.	3500	4700	6900
Price	\$	\$	\$
Sunken bolster and sliding plate, extra	\$	\$	\$
Wiring frame, extra	\$	\$	\$
Horn bolster, extra	\$	\$	\$
Horn and force, cylindrical, standard size, extra	\$	\$	\$
Removable front, extra	\$	\$	\$

Bolster-plate with bolts and wrenches are included in the price.

Stroke varying from standard and other modifications are charged for extra.

NIAGARA POWER PRESS

No. 35, Not Geared



No. 36, Geared

NIAGARA POWER PUNCHING PRESSES

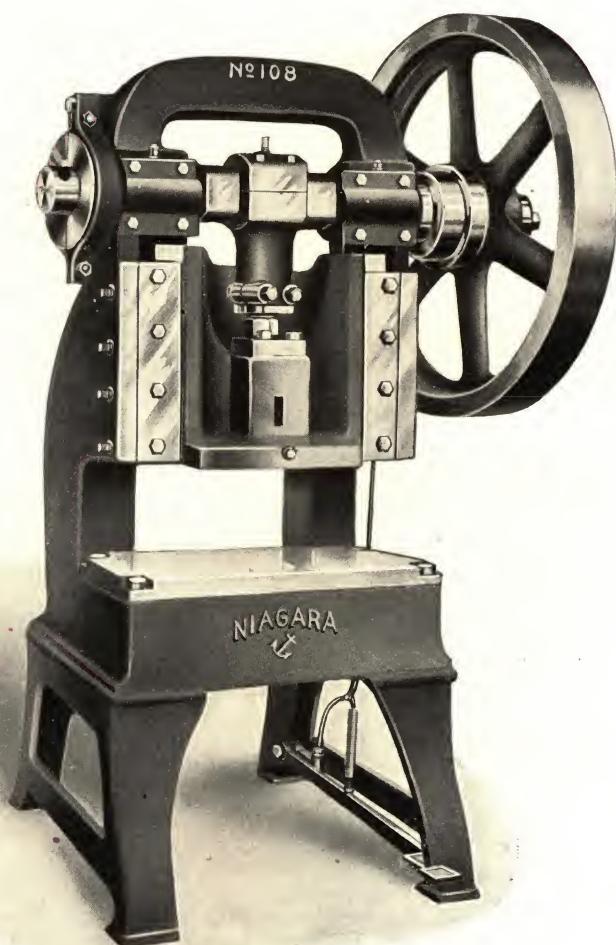
SERIES NO. 30

	Plain Press					
Nos.	34	35	36	37	38	39
Opening in bed	6 x 7	6 x 8	8 x 10	10 x 12	12 x 14	14 x 16
Distance from center of slide to back.....	5	6	7	8 1/2	10	12
From bed to slide, when up, standard stroke.....	8 1/2	9	9 1/2	10	11	11
Stroke of slide, standard.....	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Stroke of slide, maximum.....	2	2	2 1/2	3	3	3
Adjustment of slide.....	3	3	3	3	3	3
Usual hole in slide, square.....	2	2	2	3	3	3
Area top of bolster-plate.....	9 x 14	9 x 16	13 x 19	15 x 22 1/2	18 x 27 1/2	22 x 33
Thickness of bolster-plate.....	1 1/2	2	2 1/2	3	3 1/2	4
Diameter of shaft in bearings.....	2 1/2	3	3 1/2	4 1/4	5	5 3/4
Floor space, F to B-R to L.....	32 x 28	37 x 34	42 x 40	53 x 45	64 x 50	75 x 60
Height to center of shaft.....	56	61	65	67	70	73
Size of fly wheel.....	28 x 4	34 x 5	40 x 6	45 x 7	50 x 8	60 x 9
Weight of fly wheel.....	280	500	750	1100	1500	1900
Speed of fly wheel.....	rev. 110 1400	100 2200	90 3200	85 5000	80 \$5000	70 \$7500
Weight	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....
Price	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....

	Geared Press					
Nos.	18 x 2 1/2	20 x 3	25 x 4	30 x 5	35 x 6	
Size of fly wheel.....	18 x 2 1/2	20 x 3	25 x 4	30 x 5	35 x 6	40 x 7
Weight of fly wheel.....	130	175	275	500	750	1100
Speed of fly wheel	480	420	360	300	280	210
Size of pulley	6:1	6:1	6:1	6:1	7:1	7:1
Ratio of gearing.....	80	70	60	50	40	30
Strokes per minute.....	36 x 23	44 x 25	57 x 31	63 x 37	82 x 43	92 x 53
Floor space, F to B-R to L.....	1400	2200	3200	5000	8000	13000
Weight	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....
Price	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....

Bolster-plate with bolts and wrenches are included in the price.

Stroke varying from standard and other modifications are charged for extra.

No. 108. NIAGARA POWER PRESS**PLAIN**

NIAGARA POWER PRESSES**SERIES NO. 100**

The details of construction of these presses are practically the same as those of our Inclinable Presses, Series No. 1, except that the gibbs are central with the slide.

Presses No. 100 series are furnished either for permanent upright or inclined position, not adjustable for both.

Plain Press

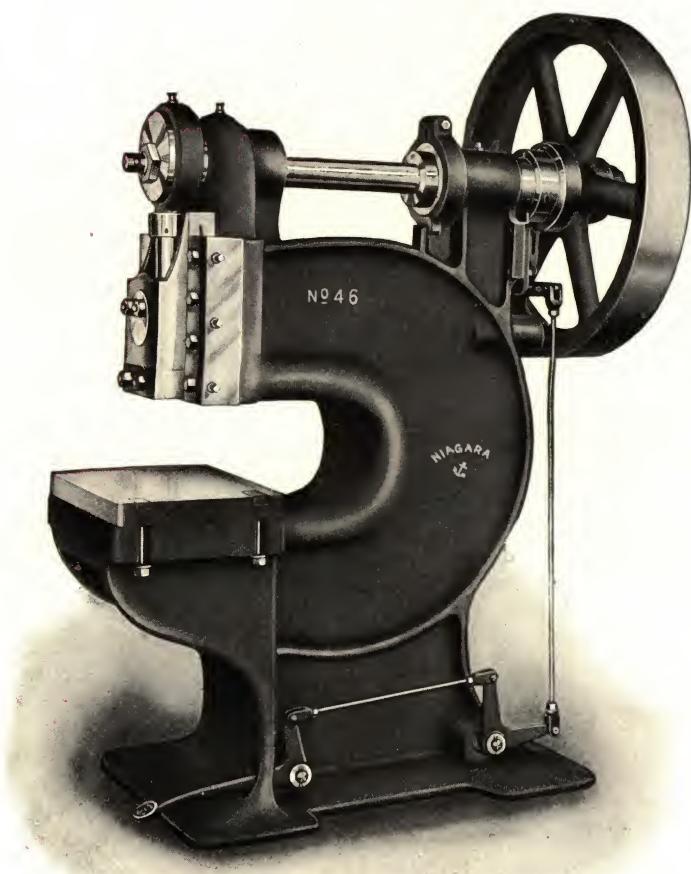
Nos.	107	108
Opening in bed, rectangular part.....inches	13 x 25	13 x 27
Opening in bed, circular part.....inches	16	
Distance from center of slide to back.....inches	9½	13
Width of opening in back of press.....inches	22½	24
From bed to slide, when up, standard stroke.....inches	10½	13
Stroke of slide, standard.....inches	3	3
Stroke of slide, maximum.....inches	5	6
Adjustment of slide.....inches	3	4
Usual hole in slide, square.....inches	3	3
Area top of bolster-plate	18½ x 33½	25½ x 37
Thickness of bolster-plate	3	3
Diameter of shaft, in bearings.....inches	4¼	5
Floor space, F to B—R to L.....inches	45 x 50	62 x 79
Height to center of shaft	69	77
Size of fly wheel.....inches	45 x 7	50 x 8
Weight of fly wheel.....lbs.	1100	1500
Speed of fly wheel.....rev.	85	80
Weight	6000	9500
Price	\$.....	\$.....

Geared Press

Size of fly wheel.....inches	30 x 5	35 x 6
Weight of fly wheel.....lbs.	500	750
Speed of fly wheel.....rev.	300	280
Size of pulley	30 x 5	35 x 6
Ratio of gearing.....	6:1	7:1
Strokes per minute.....	50	40
Weight	6500	11000
Price	\$.....	\$.....

Bolster-plate with bolts and wrenches are included in the price.

Stroke varying from standard and other modifications are charged for extra.

No. 46. NIAGARA POWER PRESS**PLAIN**

NIAGARA DEEP THROAT PRESSES**SERIES NO. 40**

These presses have a deep throat, to make them suitable for punching holes in the center of large sheets. They have been found particularly useful in the manufacture of ranges, etc.

Clutch, flywheel, shaft, eccentric, connection slide are of same construction as on punching presses, series No. 30, page 461.

Plain Press

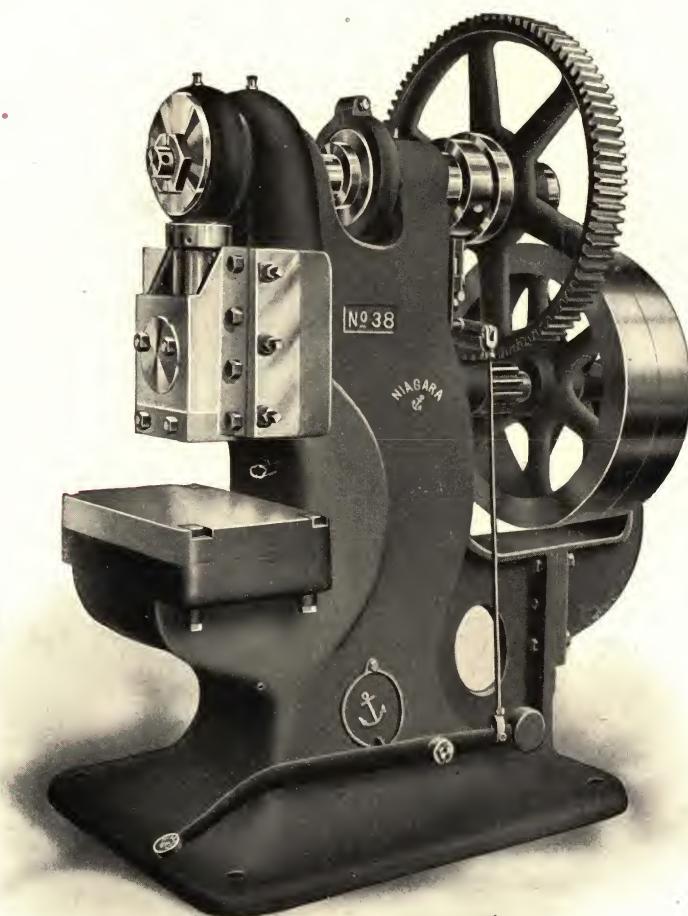
Nos.	43	44	44A	45	46	47
Opening in bed.....inches	5x8	6x8	6x8	6x8	12x14	14x16
Distance from center of slide to back	12	20	25	18	20	22
From bed to slide, when up, standard stroke	8	8½	9	9	10	10
Stroke of slide, standard.inches	1	1½	1½	1½	1½	1½
Stroke of slide, maximum.inches	2	2	2½	2½	3½	3¾
Adjustment of slide.....inches	2	3	3	3	3	3
Usual hole in slide, square...ins.	2	2	2	2	2	3
Area top of bolster-plate.inches	9½x13	10x13½	11x15¾	11x15¾	17½x23	21x24½
Thickness of bolster-plate.inches	1½	1½	2	2	2½	3
Diameter of shaft, in bearings	2¼	2½	2½	3	3½	4¼
Floor space, F to B—R to Lins.	40x22	52x28	61x28	55x34	67x40	76x45
Height to center of shaft.inches	55½	56	60	61	67	67
Size of fly wheel.....inches	22x3	28x4	28x4	34x5	40x6	45x7
Weight of fly wheel.....lbs.	175	280	280	500	750	1100
Speed of fly wheel.....rev.	120	110	110	100	90	85
Weight	1300	2200	3500	3200	5400	7300
Price	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....

Geared Press

Size of fly wheel.....inches	.....	18x2½	18x2½	20x3	25x4	30x5
Weight of fly wheel.....lbs.	.....	130	130	175	275	500
Speed of fly wheel.....rev.	.....	480	480	420	360	300
Size of pulley .....	.....	18x2½	18x2½	20x3	25x4	30x5
Ratio of gearing.....	.....	6:1	6:1	6:1	6:1	6:1
Strokes per minute.....	.....	80	80	70	60	50
Floor space, F to B—R to Lins.	.....	59x25	65x25	61x25	74x32	86x38
Weight . ....	.....	2200	3500	3200	5400	7300
Price	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....

Bolster-plate with bolts and wrenches are included in the price.

Stroke varying from standard and other modifications are charged for extra.

No. 38. NIAGARA POWER PRESS**GEARED**

NIAGARA POWER PUNCHING PRESSES**SERIES NO. 30**

These Presses are adapted to heavy work, owing to their design which combines strength and compactness with convenience in handling the work. They are especially suitable for punching and cutting bars and heavy sheet metal; for operating cutting and forming dies required in the manufacture of hardware, cutlery, etc. The base is large to insure stability, and to distribute the weight on the floor.

Clutch of the type described on page 440 controls the motion.

Fly wheel on plain Presses has a long bronze-bushed bearing, and means are provided for continuous lubrication. The lubricator is accessible while the fly wheel is in motion. Geared Presses have machine cut gears, and the large gear is bronze bushed.

Shaft is heavy and forged of steel with the clutch collar solid on the shaft. It runs in long solid bearings, scraped to a fit.

Eccentric which imparts motion to the slide is keyed to the front end of the shaft. In case it is desired to change the stroke, other eccentrics can be substituted.

Connection type No. 4 has a heavy connection screw of tool steel, the lower end of the screw being threaded into the steel pivot in the slide. The connection can be readily adjusted and locked in the desired position.

Slide has wide and long wearing surfaces, and adjustment is provided to take up wear. A loose cap at the lower end of the slide grips the punch shank in a square recess, or bushings can be inserted when the shanks of punches vary in diameter. Slide can be made with dovetail, instead of being arranged for punches with round stems, if so ordered.

Bolster-plate has slots to receive the heads of bolts that fasten it to the bed, thereby leaving the upper surface of the bolster-plate without obstruction.

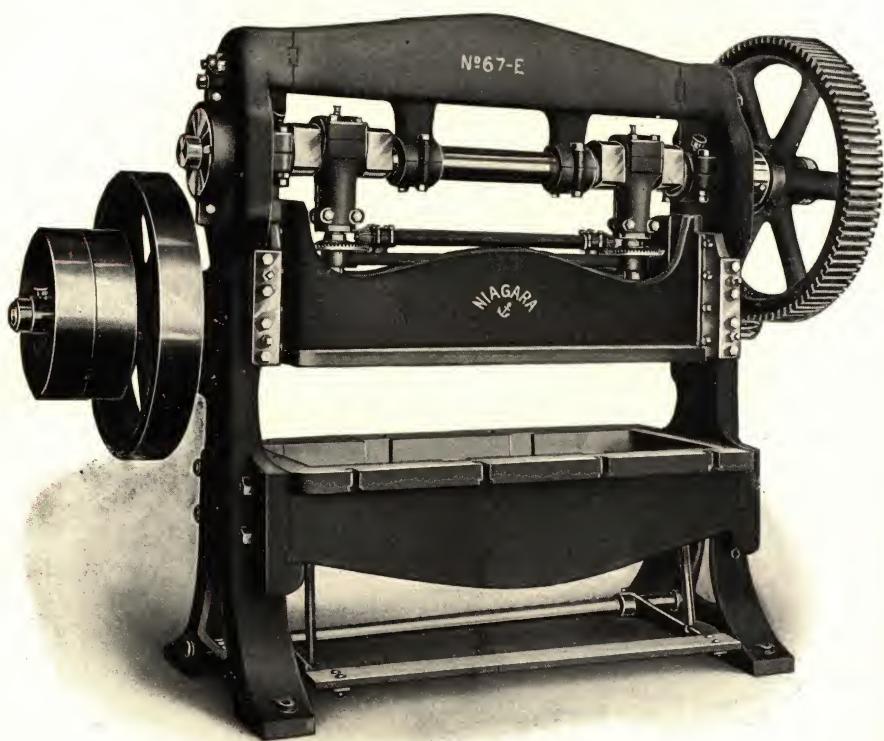
Treadle lock is furnished by means of which the operator can lock the treadle down for continuous strokes.

CAPACITIES OF POWER PUNCHING PRESSES**Not Geared**

Nos.	35 Inches	36 Inches	37 Inches	38 Inches	39 Inches
Will cut off round iron (limited by stroke), about	$\frac{13}{16} \times 4$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$
Will cut flat iron, about.....		$\frac{3}{8} \times 5$	$\frac{7}{8} \times 6$	$\frac{1}{2} \times 7$	$\frac{5}{8} \times 8$
Will punch, with 1-inch round die, iron in thickness, about.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{5}{8}$	$\frac{13}{16}$	1

Geared

Will cut off round iron (limited by stroke), about	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$
Will cut flat iron, about.....	$\frac{3}{8} \times 4$	$\frac{7}{8} \times 5$	$\frac{1}{2} \times 6$	$\frac{5}{8} \times 7$	$\frac{3}{4} \times 8$
Will punch, with 1-inch round die, iron in thickness, about.....	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{11}{16}$	$\frac{7}{8}$	$1\frac{1}{16}$

No. 67E. NIAGARA POWER PRESS**GEARED, STRAIGHT UPRIGHTS**

NIAGARA DOUBLE CRANK PRESSES

SERIES NO. 60

These Presses are used for operating long dies for blanking, punching and forming operations.

Uprights are ordinarily made straight, this being the most rigid construction. They can be furnished with a gap or open throat, when it is desired to use a Press for work longer than the machine, such as gang punching, or when the finished work is to be removed endways from the dies.

Adjustment of slide is made by bevel gears attached to the adjusting screw of the connections. The gears are actuated by a horizontal shaft and wrench. Perfect alignment is always maintained.

Clutch of the type described on page 440 is regularly used, or the jaw clutch can be applied, it being preferable for heavy geared Presses.

Shaft is heavy, forged of steel, with large crank pins. When clutch of sliding key type is used, the clutch collar is forged solid on the shaft.

Fly wheel on plain Presses has a long bronze-bushed bearing, and means are provided for continuous lubrication. The lubricator is accessible while the fly wheel is in motion.

Gears are machine cut, and the larger gear is bronze bushed.

Connection, type No. 2, has a heavy screw of tool steel, ball shaped at one end, and resting in a recess of the slide. Provision is made to take up wear on the ball. The connection screw is locked to the pitman in the desired position by means of two clamping bolts. The ball and socket construction prevents the adjustment from becoming loose while the Press is running.

Slide has long bearings, well gibbed, and there is a flange on its bottom for fastening punches.

Pockets are cored in the bed to accommodate bars for supporting the bolster-plate, when necessary.

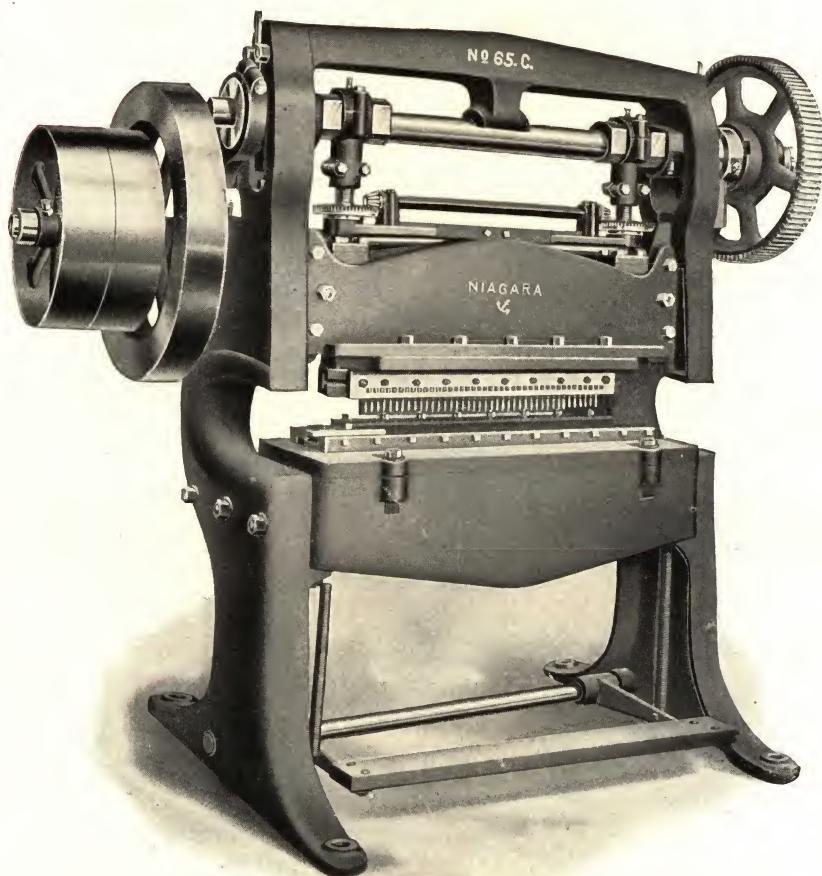
Plain Press

Nos.	65	66	67	69	612
From bed to slide, when up, standard stroke	12	12	12	12	14
Stroke of slide, standard.....inches	2	2	2	2	3
Stroke of slide, maximum.....inches	4	4	4	4	6
Adjustment of slide.....inches	3	3	3	3	4
Diameter of shaft, in bearings.....inches	3	3½	4¼	5¾	7¼
Height to center of shaft.....inches	66	66	73	75	85
Size of fly wheel.....inches	34 x 5	40 x 6	45 x 7	60 x 9	
Weight of fly wheel.....lbs.	500	750	1100	1900	
Speed of fly wheel.....rev.	100	90	85	70	

Geared Press

Size of fly wheel.....inches	28 x 4	30 x 5	40 x 6	50 x 7	60 x 9
Weight of fly wheel.....lbs.	280	500	750	1300	1900
Speed of pulleys	270	270	250	240	250
Size of pulleys	20 x 3½	24 x 4	26 x 5	32 x 7	38 x 7
Ratio of gearing.....	6:1	6:1	6:1	7½:1	9½:1

No. 612 is usually furnished single back geared. If ordered, at extra charge, it can be made double back geared, ratio of gearing 25:1.

No. 65C. NIAGARA POWER PRESS

Geared, with Gap, Fitted with Gang Punching Die for Holes with Fixed Center Distance

NIAGARA DOUBLE CRANK PRESSES

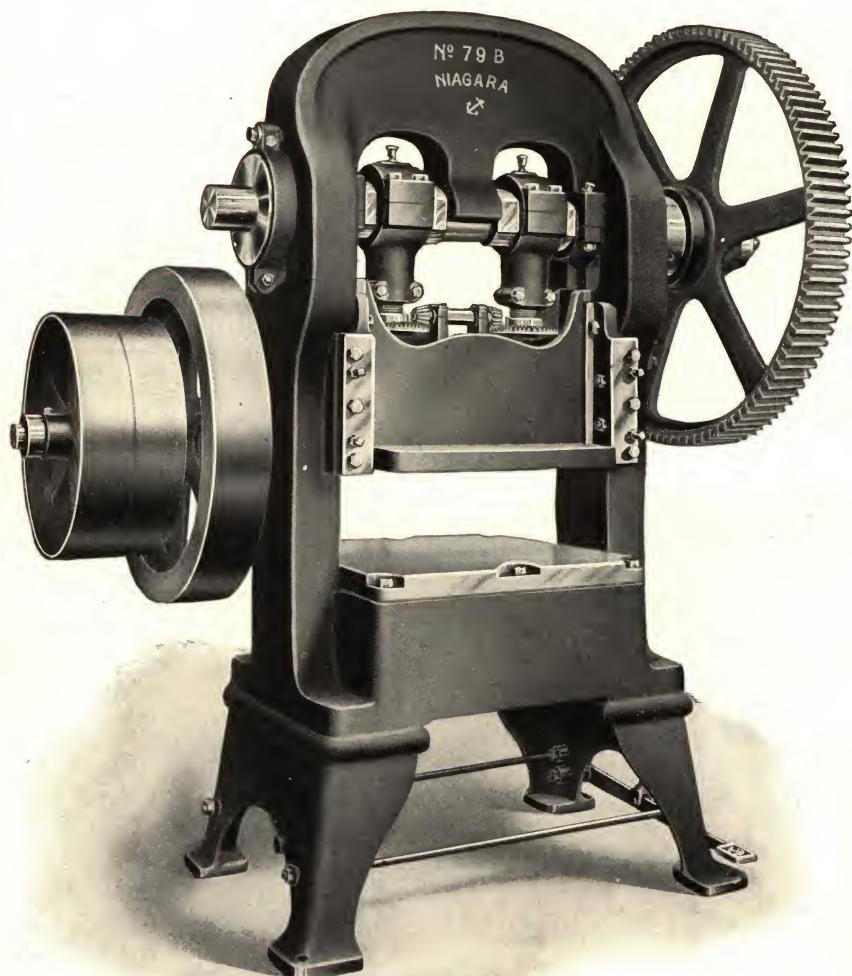
SERIES NO. 60

Nos.	65B	65C	65D	65E	66B	66C	66D	66E
Distance between uprights, in.	36	48	60	72	36	48	60	72
Opening in bed, in.	12 x 30	12 x 42	14 x 54½	14 x 66	12 x 30	12 x 42	14 x 54½	14 x 66
Area top of bed, in.	17 x 36	17 x 48	21 x 60	21 x 72	17 x 36	17 x 48	21 x 60	21 x 72
Floor space, F to B—R to L, plain, in.	44 x 61	44 x 73	44 x 85	44 x 97	44 x 62	44 x 73	44 x 86	44 x 98
Floor space, F to B—R to L, geared, in.	44 x 68	44 x 80	44 x 92	44 x 104	50 x 82	50 x 94	50 x 106	50 x 118
Weight of Plain Press, lbs.	3500	4600	5500	6400	5500	6400	7400	8400
Price of Plain Press, with bolster	\$ 4100	\$ 4900	\$ 5800	\$ 6700	\$ 5900	\$ 6800	\$ 7800	\$ 8900
Weight of Geared Press, with bolster	\$ 4100	\$ 4900	\$ 5800	\$ 6700	\$ 5900	\$ 6800	\$ 7800	\$ 8900
Price of Geared Press, with bolster	\$ 4100	\$ 4900	\$ 5800	\$ 6700	\$ 5900	\$ 6800	\$ 7800	\$ 8900
Nos.	67B	67C	67D	67E	67F	67G	67H	67I
Distance between uprights, in.	36	48	60	72	84	96	108	120
Opening in bed, in.	22 x 28	22 x 40	22 x 52	22 x 64	22 x 76	22 x 88	22 x 100	22 x 112
Area top of bed, in.	28 x 36	28 x 48	28 x 60	28 x 72	28 x 84	28 x 96	28 x 108	28 x 120
Floor space, F to B—R to L, plain, in.	45 x 71	45 x 83	45 x 95	45 x 107	45 x 119	45 x 131	45 x 143	45 x 155
Floor space, F to B—R to L, geared, in.	53 x 90	53 x 102	53 x 114	53 x 126	53 x 138	53 x 150	53 x 162	53 x 174
Weight of Plain Press, lbs.	6900	7800	8900	10000	11000	12000	13000	14000
Price of Plain Press, with bolster	\$ 7500	\$ 8400	\$ 9500	\$ 10700	\$ 12000	\$ 13200	\$ 14400	\$ 15600
Weight of Geared Press, with bolster	\$ 7500	\$ 8400	\$ 9500	\$ 10700	\$ 12000	\$ 13200	\$ 14400	\$ 15600
Price of Geared Press, with bolster	\$ 7500	\$ 8400	\$ 9500	\$ 10700	\$ 12000	\$ 13200	\$ 14400	\$ 15600
Nos.	69B	69C	69D	69E	69F	69G	69H	69I
Distance between uprights, in.	35	48	60	72	84	96	108	120
Opening in bed, in.	24 x 27	24 x 39	24 x 51	24 x 63	24 x 75	24 x 87	24 x 99	24 x 111
Area top of bed, in.	30 x 36	30 x 48	30 x 60	30 x 72	30 x 84	30 x 96	30 x 108	30 x 120
Floor space, F to B—R to L, plain, in.	60 x 82	60 x 94	60 x 106	60 x 118	60 x 130	60 x 142	60 x 154	60 x 166
Floor space, F to B—R to L, geared, in.	76 x 108	76 x 120	76 x 132	76 x 144	76 x 156	76 x 168	76 x 180	76 x 192
Weight of Plain Press, lbs.	11000	13000	15000	17000	19500	21500	23000	24500
Price of Plain Press, with bolster	\$ 12800	\$ 15000	\$ 17000	\$ 19000	\$ 21500	\$ 23000	\$ 24500	\$ 26000
Weight of Geared Press, with bolster	\$ 12800	\$ 15000	\$ 17000	\$ 19000	\$ 21500	\$ 23000	\$ 24500	\$ 26000
Price of Geared Press, with bolster	\$ 12800	\$ 15000	\$ 17000	\$ 19000	\$ 21500	\$ 23000	\$ 24500	\$ 26000

Uprights with gap are charged for extra.

Presses No.	65	66	67	69	71
Depth of gap, in.	7	7	8	8	8

Bolster-plate with bolts and wrenches are included in price. Stroke varying from standard is charged for extra.

No. 79B. NIAGARA POWER PRESS

Geared, Straight Uprights

NIAGARA DOUBLE CRANK PRESSES

SERIES NO. 70

Plain Press

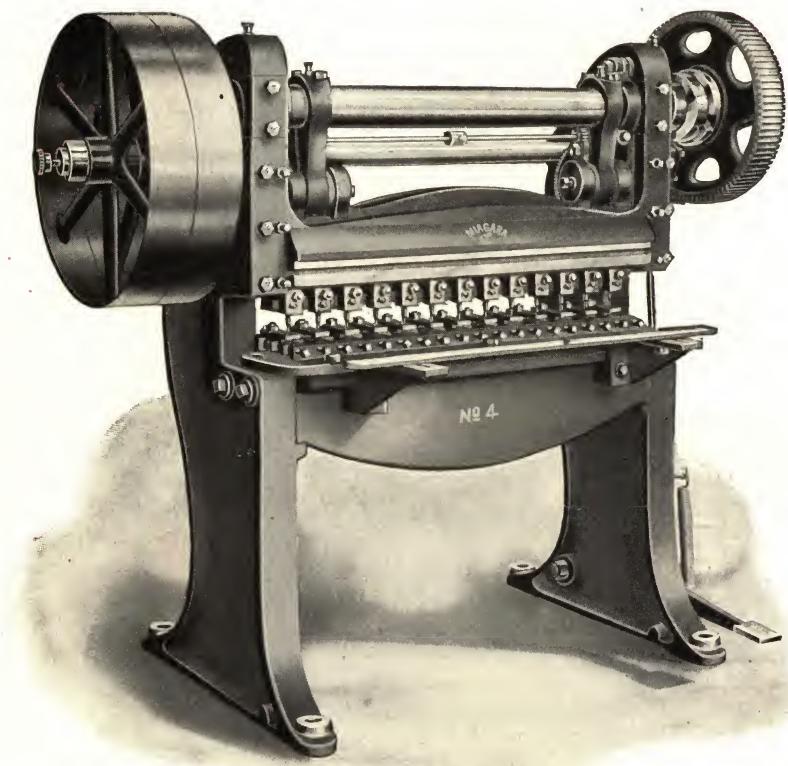
Nos.	76B	77B	77C	78B	78C	79B	79C
Opening in bed	14 x 27	16 x 28	16 x 38	20 x 30	20 x 42	20 x 30	20 x 38
Distance between uprights	33	36	44	36	48	36	44
From bed to slide, when up, standard stroke . . . . .	inches	inches	inches	inches	inches	inches	inches
Stroke of slide, standard	12	12	12	13	13	13	13
Stroke of slide, maximum	2	2½	2½	3	3	3	3
Adjustment of slide	5	6	6	6	6	6	6
Area top of bolster-plate	3	3	3	3	3	3	3
Thickness of bolster-plate	21 x 32	24 x 35	24 x 43	28 x 35	28 x 47	30 x 35	30 x 43
Diameter of shaft, in bearings	2	2	2	2½	2½	2¾	2¾
Floor space, F to B—R to L	3½	4¼	4¼	5	5	5¾	5¾
Height to center of shaft	40 x 68	45 x 72	45 x 80	50 x 78	50 x 90	60 x 77	60 x 85
Size of fly wheel	69	73	73	76	76	79	79
Weight of fly wheel	40 x 6	45 x 7	45 x 7	50 x 8	50 x 8	60 x 9	60 x 9
Speed of fly wheel	750	1100	1100	1500	1500	1900	1900
Weight	90	85	85	80	80	70	70
Price	\$5700	\$7700	\$8700	\$10200	\$12000	\$13500	\$15800
	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....

Geared Press

Size of fly wheel	inches	30 x 5	40 x 6	40 x 6	45 x 7	45 x 7	50 x 7
Weight of fly wheel . . . . .	.lbs.	500	750	750	1100	1100	1300
Speed of pulleys	rev.	270	250	250	260	260	240
Size of pulleys	inches	24 x 4	26 x 5	26 x 5	28 x 6	28 x 6	32 x 7
Ratio of gearing	inches	6:1	6:1	6:1	7½:1	7½:1	7½:1
Floor space, F to B—R to L	inches	45 x 87	54 x 92	54 x 100	75 x 112	75 x 112	72 x 103
Weight . . . . .	.lbs.	6200	8600	9700	11600	13500	15500
Price		\$.....	\$.....	\$.....	\$.....	\$.....	\$.....

Bolster-plate with bolts and wrenches are included in the price.

Stroke varying from standard and other modifications are charged for extra.

No. 4. NIAGARA POWER GANG PUNCH

With Punches and Dies Adjustable for Varying Center Distances

NIAGARA POWER GANG PUNCHES

These machines are principally intended for punching rows of holes along the edges of sheets. The uprights have a gap to permit of punching holes along the edges of sheets of any length, at successive strokes.

Driving mechanism is overhead to keep it free from punchings and scale. Back gears are machine cut, and the motion is controlled by a positive clutch of the type described on page 440, which causes the slide to stop at the highest point after every stroke, unless the treadle is kept depressed. The wearing surfaces are large, and adjustment is provided for wear.

Punches and dies are usually made for holes in fixed positions. They are held in suitable plates fastened to the bed and slide in such manner that they can be easily removed to permit of substituting others for holes of different size and location. This method avoids loss of time and possible errors in setting the dies. Provision is made that broken punches can be quickly replaced. The dies have strippers, and brackets are attached to the frame of the machine to support the sheets.

Adjustable punches and dies can be furnished at the proper extra charge, to permit of regulating the distance between the holes. The smallest distance must not be less than $1\frac{1}{2}$ inch.

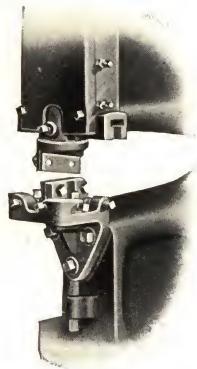
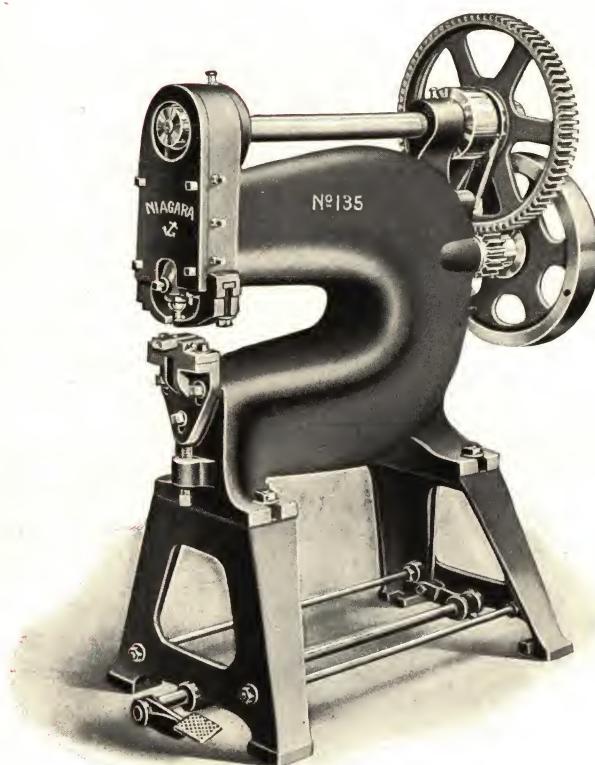
Prices are governed by the nature of the work. Inquiries should state the diameter of the holes, the number of holes to be punched at the same stroke, distance from center to center of holes, and from the edge of the sheet, thickness and kind of heaviest material to be punched.

No. 4 will punch 30 holes, $\frac{1}{4}$ -inch diameter, through No. 12 iron, or the equivalent.

No. 6 will punch 30 holes, $\frac{1}{4}$ -inch diameter, through $\frac{3}{16}$ -inch iron, or the equivalent.

Heavier Gang Punches. We have other patterns that can be used for work beyond the limit mentioned above.

Number	4	6
Distance between uprights inches	$37\frac{1}{2}$	$36\frac{1}{2}$
Depth of gap from center of slide inches	$3\frac{1}{4}$	4
Stroke of slide inches	1	$1\frac{1}{8}$
Adjustment of slide inches	$\frac{1}{2}$	$\frac{3}{4}$
Size of fly wheel inches	25×4	30×5
Weight of fly wheel lbs.	275	500
Speed of fly wheel rev.	300	270
Size of pulley inches	25×4	30×5
Ratio of gearing	6:1	6:1
Diameter of shaft in bearings inches	$2\frac{1}{2}$	$3\frac{1}{2}$
Floor space, R to L—F to B inches	71×35	82×50
Height to center of shaft inches	51	56
Weight about lbs.	2600	5000
Price	\$.....	\$.....

No. 135. NIAGARA POWER PUNCH

**Shearing
Attachment**

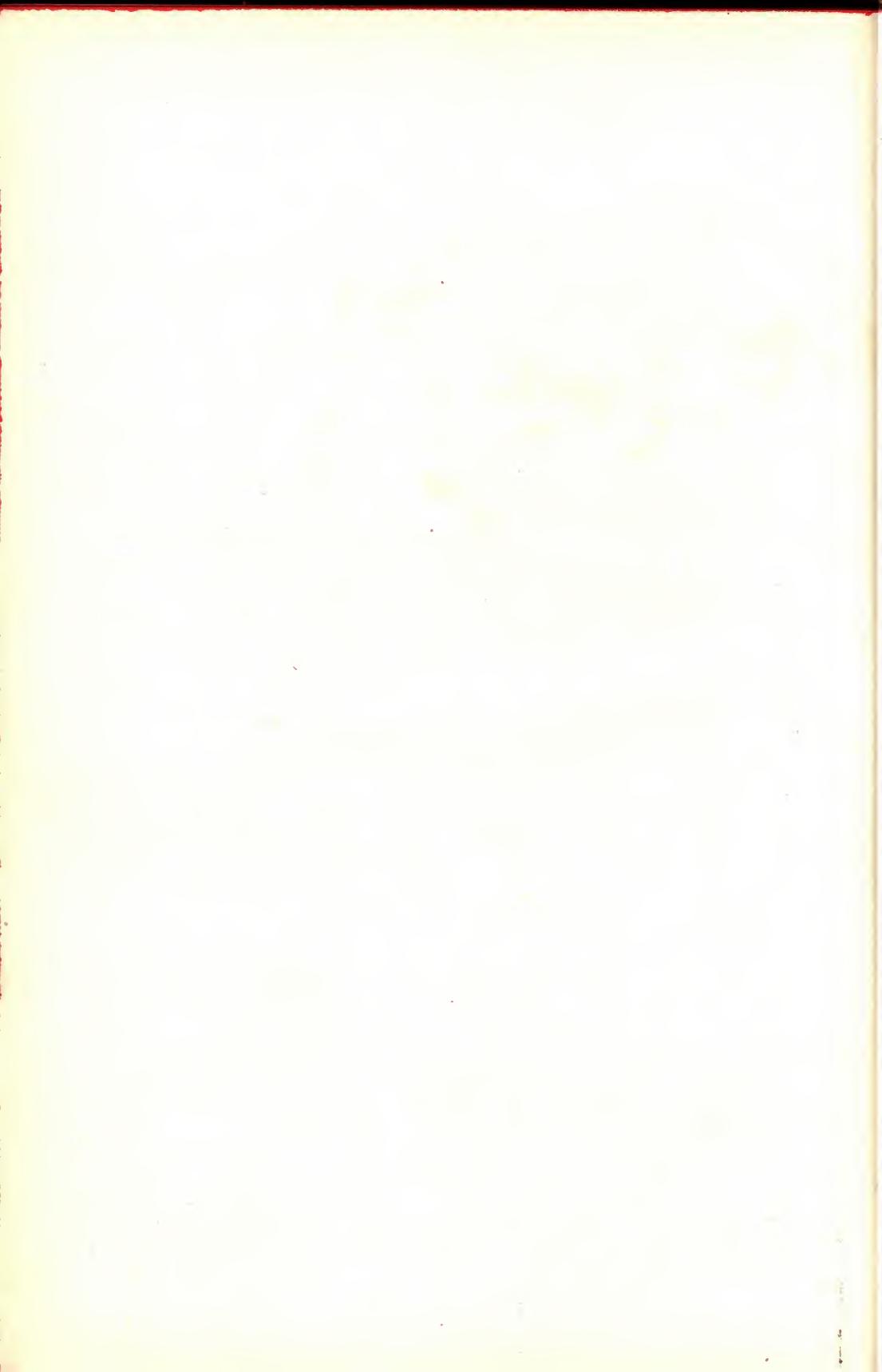
NIAGARA POWER PUNCHES**SERIES NO. 130**

These machines are arranged for punching small round holes, and they can also be used for punching small holes of irregular shape. The motion is controlled by a positive clutch actuated by a foot treadle.

Cutting Attachment. We can furnish a cutting attachment for use in place of the punches and dies. The knives can be set either parallel, or at right angle to the front of the Press, and their position can be changed quickly. The knives are 4 inches long, and each has two cutting edges. The same machine can be used for punching and shearing alternately, provided the working parts for both classes of work are ordered.

Capacity. The Punching Machine is suitable for $\frac{3}{8}$ -inch hole through $\frac{5}{8}$ -inch iron or the equivalent. Will cut $\frac{3}{8}$ -inch iron and lighter. The price of punching machine includes die and punches for holes $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ -inch diameter.

Nos.	135	136
Depth of throat inches	18	24
Stroke inches	$\frac{3}{4}$	$\frac{3}{4}$
Distance from top of die to slide, when up inches	$2\frac{3}{4}$	$2\frac{3}{4}$
Size of fly wheel, if geared inches	18 x 3	18 x 3
Proportion of gearing	$4\frac{1}{2}:1$	$4\frac{1}{2}:1$
Speed per minute rev.	300	300
Height to top of bed inches	29	31
Height to center of shaft inches	45	47
Floor space, F to B—R to L inches	43 x 22	53 x 22
Weight lbs.	1200	1700
Price for punching only	\$	\$
Price for shearing only	\$	\$
Shear chucks and knives to punch, extra	\$	\$



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